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# University of Southampton

Faculty of Business and Law

Southampton Business School

**The practical consequences of the transformation of the UK fixed income, currency, and commodity markets (“FICC”) into algorithmic realms for the management of conduct risk**

by

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Thesis for the degree of Doctor of Business Administration

October 2024

# University of Southampton

## Abstract

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The practical consequences of the transformation of the UK fixed income, currency, and commodity markets (“FICC”) into algorithmic realms for the management of conduct risk

by

By Alexander Conrad Culley

Financial markets have been transformed into algorithmic realms, which have radically altered humans' role in trading liquid financial instruments. Compliance officers, risk analysts, and developers have become essential stakeholders in a firm's execution or trading algorithms deployment. Senior managers, usually operating several layers above the front lines, struggle to set a tone for the conduct of business that will resonate. Previously, exchange enforcers largely only had to concern themselves with the behaviour of floor traders. Nowadays, they must detect and deter misbehaviour from a much broader constituency that includes non-member participants worldwide.

This thesis employs qualitative research techniques to explore the implications of these shifts for the management of conduct risk. Conduct risk is a relatively new concept in the regulation of financial markets, having emerged as a distinct risk category in the aftermath of the 2007-08 financial crisis. Governments legislated to introduce personal accountability regimes to “hardwire” new expectations to identify and mitigate conduct risk. Nevertheless, the effectiveness of these arrangements is already being tested by digitisation.

In 2021, 35 semi-structured interviews were conducted with representatives from (primarily UK-based) investment firms, technology vendors, consulting firms, and regulators. The interview data was supplemented by secondary data from firms' websites and other sources. This included the analysis of 799 enforcement notices published by four key derivatives exchanges.

Key findings from the research include (1) high alignment between firms' public value statements and their employees' understanding of conduct risk; (2) low penetration of some priorities on regulators' agendas; (3) a good understanding of some technical requirements introduced to manage algorithmic conduct risk, counterbalanced by potential fatigue, complacency, cost pressures and concern about the ability to control clients' deployment of algorithms; and (4) that the effectiveness of exchanges' enforcement efforts in reducing conduct risk is a mixed picture. Multiple recommendations for practice are made based on the findings.

The thesis makes several contributions to knowledge. First, it helps to deepen the understanding of conduct risk in non-bank, non-securities trading environments. Second, it examines for the first time the effectiveness of some aspects of post-crisis regulatory initiatives. Third, the thesis shifts the lens through which the effectiveness of exchange enforcement is scrutinised from a legal to a behavioural one.

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## List of Accompanying Materials

The following interview transcripts accompany this thesis:

Interview with an algorithmic trading expert.

Interview with a bond trader.

Interview with a conduct risk expert.

Interview with a regulator #1.

Interview with a regulator #2.

Interview with a regulator #3.

Interview with a regulatory consultant.

Interview with a regulatory reporting expert.

Interview with a sales representative at an electronic market maker.

Interview with a senior FX trader.

Interview with a senior manager #1.

Interview with a senior manager #2.

Interview with a senior manager #3.

Interview with a senior manager #4.

Interview with a senior manager #5.

Interview with a senior manager #6.

Interview with a senior manager #7.

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Interview with a senior manager #9.

Interview with a senior manager #10.

Interview with a senior manager #11.

Interview with a senior manager #12.

Interview with a senior manager #13.

Interview with a senior manager at an MTF.

Interview with a senior manager at a quantitative hedge fund.

Interview with a senior manager at an electronic market maker.

Interview with a senior manager at a client offering sub-delegation to indirect clients.

Interview with a senior manager specialising in FX trading.

## List of Accompanying Materials

Interview with a senior metals sales and trading professional.

Interview with a surveillance expert at a vendor.

Interview with a trade surveillance expert #1.

Interview with a trade surveillance expert #2.

Interview with an expert in metals trading and risk management.

Interview with an IT professional.

Interview with a trader at a physical user of the LME.

## Research Thesis: Declaration of Authorship

**Print name:** Alexander Conrad Culley

**Title of thesis:** The practical consequences of the transformation of the UK fixed income, currency, and commodity markets (“FICC”) into algorithmic realms for the management of conduct risk

I declare that this thesis and the work presented in it is my own and has been generated by me as the result of my own original research.

I confirm that:

1. this work was done wholly or mainly while in candidature for a research degree at this University;
2. where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. where I have consulted the published work of others, this is always clearly attributed;
4. where I have quoted from the work of others, the source is always given. Except for such quotations, this thesis is entirely my work;
5. I have acknowledged all main sources of help;
6. where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself; and
7. parts of this work have been published as:

## Research Thesis: Declaration of Authorship

CULLEY, A. 2020a. Conduct risks and their mitigation in algorithmic trading firms: a systematic literature review. *Journal of Financial Compliance*, 4(1), 34-52.

CULLEY, A. 2021. Identifying and mitigating 'conduct risk' in algorithmic FICC trading. *Journal of Financial Compliance*, 4(3), 267-281.

CULLEY, A. 2023b. Is employees' understanding of conduct risk aligned with values espoused in their employers' public statements? *Journal of Financial Compliance*, 7(1), 82-100.

CULLEY, A. C. 2022. Does the deployment of algorithms combined with direct electronic access increase conduct risk? Evidence from the LME. *Journal of Financial Regulation and Compliance*, 31(2), 220-236.

CULLEY, A. C. 2023c. Insights into UK investment firms' efforts to comply with MiFID II RTS 6 that governs the conduct of algorithmic trading. *Journal of Financial Regulation and Compliance*, 31(5), 607-629.

CULLEY, A. C. 2024. How effective are the enforcement activities of derivatives exchanges in the digital age? A survey of enforcement notices through the lens of humans. *Journal of Financial Regulation and Compliance*, Ahead-of-print(Ahead-of-print).

**Signature:**

**Date:**



## **Acknowledgements**

The author would like to acknowledge Professor Simon Wolfe at the University of Southampton for his advice and support throughout the research and publication processes. Furthermore, the author is grateful to the help provided to him by certain industry professionals who either took part in this study or provided him with leads. These professionals must remain anonymous, but they know who they are. The author is also indebted to: (i) Professor John Ashton, Professor of Financial Regulation at the University of York and editor of the Journal of Financial Regulation and Compliance; and (ii) Simon Beckett and the team at Henry Stewart Publications, publisher of the Journal of Financial Compliance, for their sage advice and support. I also appreciate the efforts of the anonymous reviewers of the articles comprising this thesis's substantive body for their detailed suggestions for improvement. Finally, the author would like to thank his family for their understanding and patience.

## Definitions and Abbreviations

AI .....	Artificial intelligence.
API .....	Application Programme Interface.
AT .....	Algorithmic trading.
ATS.....	Alternative Trading System.
BoE .....	Bank of England.
CCO .....	Chief Compliance Officer.
CEO .....	Chief Executive Officer.
CFO.....	Chief Financial Officer.
CFTC .....	Commodity Futures Trading Commission.
CLOB .....	Central limit order book.
CME .....	Chicago Mercantile Exchange.
COCON.....	FCA Code of Conduct.
COMEX.....	Commodity Exchange Inc.
COO.....	Chief Operating Officer.
CSD.....	Central Securities Depository.
CTP .....	Critical Third Party.
DBA.....	Doctor of Business Administration.
DCM.....	Designated Contract Market.
DEA .....	Direct electronic access.
DMA .....	Direct market access.
EEX.....	European Energy Exchange.
ETD .....	Exchange-traded derivative.
FCA .....	Financial Conduct Authority.
FIA.....	Futures Industry Association.

## Definitions and Abbreviations

FICC.....	Fixed income, currency and commodities.
FIX.....	Financial Information Exchange.
FMSB.....	Financial Markets Standards Board.
Forex.....	Foreign exchange.
FSA .....	Financial Services Authority.
FSB .....	Financial Stability Board.
FSMA.....	Financial Services and Markets Act 2000.
FX.....	Foreign exchange.
HFT .....	High-frequency trading.
HKEX .....	Stock Exchange of Hong Kong, also known as the Hong Kong Exchange.
IDB.....	Inter-dealer broker.
IFPR .....	Investment Firms Prudential Regime.
ISV .....	Independent software vendor.
KYC .....	Know your customer.
LFT .....	Low-frequency trading.
LIBOR.....	London Interbank Offered Rate.
LLM .....	Large language model.
LME.....	London Metal Exchange.
LSE.....	London Stock Exchange.
MAR .....	Market Abuse Regulation.
MIFID I.....	First Markets in Financial Instruments Directive.
MIFID II.....	Second Markets in Financial Instruments Directive.
MTF .....	Multilateral trading facility.
NYBOT.....	New York Board of Trade.
NYMEX .....	New York Mercantile Exchange.

## Definitions and Abbreviations

OTC.....	Over-the-counter.
OTF .....	Organised Trading Facility.
PhD .....	Doctor of Philosophy.
Phil Papers .....	A philosophy research database.
PRA .....	Prudential Regulation Authority.
RCH .....	Recognised Clearing House.
RFQ .....	Request for a quote.
RIE .....	Recognised Investment Exchange.
ROIE.....	Recognised Overseas Investment Exchange.
RTS 6 .....	Regulatory Technical Standard 6.
SEC .....	Securities and Exchange Commission.
SFE.....	Shanghai Futures Exchange.
SI.....	Systematic Internaliser.
SJR .....	Scimago Journal Rank.
SMCR .....	Senior Managers and Certification Regime.
SRO .....	Self-Regulatory Organisation.
SSRN.....	Social Science Research Network.
TCF .....	Treating Customers Fairly.

## Chapter 1 Introduction

On 4<sup>th</sup> August 2023, the Financial Conduct Authority (“FCA”), the UK’s financial regulator, published an open letter addressed to the Chief Executive Officers (“CEOs”) of investment firms engaged in principal trading (2023h). In this letter, the FCA implored firms to re-assess the effectiveness of their algorithmic trading (“AT”) controls, stating:

*“Algorithmic trading is an important part of financial markets, and **it is critical that firms consider the market conduct implications of their trading activity [author’s emphasis]** and the impact it has on overall market integrity. We expect firms to devote appropriate resources to maintaining effective oversight functions and controls aimed at reducing the impact of any trading incidents on the orderly functioning of the markets they operate in, including where firms deploy AI systems. We also expect firms to be able to show how their systems and controls have been tailored to reflect the nature, scale, and complexity of their business models.”*

### FINANCIAL CONDUCT AUTHORITY (2023H)

The author of this thesis has worked in the financial sector for circa 17 years, serving as both a Chief Compliance Officer and non-executive director at non-bank investment firms active in trading on the financial markets. During this time, the author witnessed the growth of AT, chiefly in asset classes other than securities, first-hand. The author was present at one firm when it made its first foray into client self-directed trading. The firm launched a platform allowing its clients to place orders directly in a market without any intervention from one of its brokers. The platform's functionality included placing orders with the assistance of execution algorithms. For example, one could place an order that would be executed in tranches by an algorithm to reduce the possibility of an adverse price movement (known as an “iceberg order”). Such developments were at once greeted with excitement and apprehension in the broking community. On the one hand, senior managers saw an opportunity to reduce overhead and error rates (for example, from brokers misplacing customer orders) and reach a new demographic (a younger, more computer literate trader based anywhere in the world, or at least this was the perception).

## Chapter 1

On the other hand, voice brokers feared for their livelihoods, the usual techno-sceptics did not buy the “hype”, and risk and compliance officers were sometimes slow to reconcile themselves to the paradigm shift.

Concomitantly, with the proliferation of AT and broader move to digital forms of trading, the world would experience its worst financial crisis since the Great Depression in 2007-08 (Stewart, 2008). This was swiftly followed by the European sovereign debt crisis (2009) (Gourinchas et al., 2020), the Flash Crash (2010) (Angstadt, 2011) and the UBS rogue trader scandal (2011) (Fortado, 2015). These events triggered a wave of reforms coupled with an intense interest in increasing accountability for personal conduct. Still a relative newcomer to the world of finance, the author found himself grappling with unfamiliar concepts such as “behavioural science”, “conduct risk”, and “culture”. As with much of the AT-related terminology, this unfamiliarity was shared by both senior and junior professionals alike. Both were in uncharted territory, particularly given that these concepts felt nebulous compared to the “hard” rules that had hitherto been relied upon to regulate behaviour. Concurrently with struggling to understand and implement the swathes of “big ticket”, highly technical regulations that were being promulgated in the 2010s (examples: the second Markets in Financial Instruments Directive (“MiFID II”) and the European Markets Infrastructure Regulation (“EMIR”)) firms and their staff were expected to reflect on their “human” values, customs, and vulnerabilities. Not everyone could adjust to these new and voluminous standards. Many would leave the industry.

After several initiatives taken by the regulator in the 2010s affecting firms in the sector in which the author had predominantly worked (wholesale sell-side brokerage), he began to question their likely effectiveness. The author was especially keen to explore whether the new expectations, a curious mix of the “behavioural” and “technical”, were worth the significant amount of investment (financial, temporal, and emotional) that firms and their staff have made to try and meet them. Having recently read Michael Lewis’s bestselling book *Flash Boys* (Lewis, 2015) with a critical eye in the context of his own experiences, the author identified the intersection between the human and digital realms as a potentially intriguing conduct “fault line” within which to explore this topic.

The objective of the research is to answer the following question:

## Chapter 1

- *What are the practical consequences of the transformation of the UK fixed income, currency, and commodity markets (“FICC”) into algorithmic realms for the management of conduct risk?*

This question seeks to address the high-level business problem outlined in the preceding paragraphs, namely whether (i) algorithmic disruption reshaping conduct in the financial markets and (ii) responses to this, such as MiFID II and the introduction of broader behavioural approaches to conduct risk management are effective in meeting the challenges this poses. This is a live, real-world issue, as the excerpt from the FCA’s letter featured at the beginning of this chapter illustrates. Potential market abuse has tended to capture the public’s imagination. This is thanks to the intense, and sometimes sensationalist, coverage “outlier” events such as the Flash Crash have received (Vaughan, 2021, Akansu, 2017). Furthermore, broader fears about artificial intelligence’s potential risks have fed “The Fear Industry.” However, the “real world” that senior managers, front-line staff, regulators, and consultants face daily is often much more mundane.

As shown in the following chapters, misconduct in algorithmic markets is probably more likely to occur through unawareness or an accidental omission to act than calculated behaviour. Contrary to popular portrayals, machines can barely “think” for themselves yet. Algorithms are, for the most part, still quite “basic” but a niche group of highly secretive quantitative hedge funds and proprietary trading firms. In addition, many “middle” and “back” office processes are automated using algorithmic functionality. This may not be perceived to be as interesting as trading algorithms by some, but they are integral to trading logistics. For these reasons, the author contends that this broader and more popular algorithmic realm warrants further study. Areas considered “boring” or otherwise provocative of lethargy warrant being put under the spotlight because they are underexplored. It is time to shift the discussion of algorithmic-related conduct risk away from the *Flash Boys* and onto the no-frills users of algorithms.

In some instances, such an investigation must explore other areas of market participants’ activities and infrastructure, even though, at first glance, they may not appear to have

anything to do with the “algorithmic realm”. This is because firms and the markets in which they operate represent complex ecosystems. A firm’s general outlook on conduct risk will likely inform its employees’ use (or misuse) of algorithms. Conversely, employees’ experiences of algorithmic and digital trading are likely to consciously or unconsciously shape their perceptions of conduct risk, particularly if they are negative. Consequently, these experiences may inform how a firm defines or understands conduct risk. Similarly, participants in regulated financial markets will inevitably make comparisons about how misconduct perpetrated with or without algorithms is treated by those markets’ supervisory and enforcement mechanisms. This is likely to expose divisions rooted in demography, with former floor traders extolling the virtues of potential ostracisation as a natural form of restraint. In contrast, graduates with high technical proficiency might contend that digitisation is more transparent, making it easier to uncover bad behaviour.

As the systematic literature review in the second chapter of this thesis will show, conduct risk alone has been an underexplored topic in academic literature. It has garnered much interest in practitioner circles, mainly due to the publication of famous works by the likes of Hunt (2023) and Miles (Miles, 2017, Miles, 2021b). Its real-world qualities as a subject of study for a DBA are evidenced by the recent raft of papers that have appeared in the peer-reviewed *Journal of Financial Compliance*. Positioned as “the leading journal for compliance professionals at financial institutions” (2016f), these papers have examined: (1) how conduct risk has evolved in the wake of the COVID-19 pandemic and the resultant boom in homeworking (Williams, 2023); (2) the management of conduct risk in cross-jurisdictional settings (Hirst, 2023); and (3) best practice in implementing the UK’s Certified Persons Regime, which is a vital part of the FCA’s toolkit to strengthen personal accountability post the 2007-08 financial crisis (Gowland, 2023). These papers highlighted various conduct-related areas where future research would be beneficial. Significantly, in the context of this thesis, one practitioner commented that:

*“While this technology [machine learning and artificial intelligence] has the potential to dramatically benefit how institutions identify and assess risk, including conduct risk, it also presents new risks, as customer-facing use*



## Chapter 1

*cases increase, and algorithms are used to make decisions. The complexities of this space are worthy of an entirely distinct paper.”*

**(WILLIAMS, 2023)**

A doctoral thesis would struggle to cover every suggested area for further study. Nevertheless, it is posited that what follows represents a cohesive body of work that significantly contributes to improving the understanding of conduct risk in algorithmic markets and investment firms more generally. The author took a pragmatic approach to insight generation when compiling these works. This involved creating chapters according to interesting threads and leads from interviews and other sources organically instead of approaching topics with preconceived hypotheses. Four substantive chapters would result from taking this approach, a summary of which is provided in **Table 1.1**.

**Table 1.1** *Summary of substantive chapters*

Research question/chapter	Level(s) of conduct risk management	Justification
<p><b>Chapter Four:</b> Is employees' understanding of conduct risk aligned with values in their employers' public statements? (Culley, 2023b)</p>	<p>“Tone from the top”</p> <p>Governance</p> <p>Goal setting</p> <p>Culture</p>	<p>The regulator deliberately refuses to define “conduct risk” in its rulebook. This is because it wants firms to adopt a definition customised to their distinctive business models. In formulating a definition, firms are expected to fuse a considered “tone from the top”, at which point senior managers set expected standards of behaviour with cultural insights generated by middle management and input from front-line employees based on their experience of “what</p>

Research question/chapter	Level(s) of conduct risk management	Justification
		<p>actually happens”. It is common practice for firms to publish their cultural expectations and definitions of conduct risk in “value statements”, often put into the public domain.</p> <p>Writing about combatting market abuse in algorithm trading operations, de Leeuw (2023) asserted: “A proper culture is required to prevent and detect abusive behaviours. The highest management has to pave the way for it.” Therefore, scrutinising employees’ alignment with the tone set from the top of their organisations seemed like a logical place to begin.</p>
<p><b>Chapter Five:</b> How robust are UK investment firms’ efforts to comply with the provisions of Regulatory Technical Standard 6 (“RTS 6”) to the second Markets in Financial Instruments Directive (“MiFID II”) that</p>	<p>Operating model</p> <p>Risk taxonomy</p> <p>Transparency</p> <p>Measuring</p> <p>Monitoring</p>	<p>RTS 6 is widely regarded as one of the most complex sets of regulations that sell-side investment firms based in the UK and EU must comply with following the implementation of MiFID II. Central to the purpose of RTS 6 is mitigating the risks</p>

Chapter 1

Research question/chapter	Level(s) of conduct risk management	Justification
governs firms' conduct of AT? (Culley, 2023c)	Reporting	<p>associated with AT's abusive and disorderly conduct.</p> <p>As the effectiveness of firms' systems and controls is highly dependent upon the tone set by senior management, this chapter builds upon the themes discussed in the first chapter.</p>
<p><b>Chapter Six:</b> Does the deployment of algorithms combined with direct electronic access increase conduct risk? (Culley, 2022)</p>	<p>Operating model</p> <p>Accountability</p> <p>Detection</p>	<p>Most sell-side firms now offer their clients the ability to trade directly on an exchange without any intervention from one of their brokers at the point of execution. To date, regulators' conduct risk initiatives have focused on the behaviour of firms' employees. Even further, a definition of conduct risk offered by one of the pioneering practitioner texts on the subject is limited to the behaviour of financial services professionals. This chapter considers whether this perspective should be revised given the progression towards self-directed markets. The fact that remote participants can calibrate or deploy algorithms</p>

Chapter 1

Research question/chapter	Level(s) of conduct risk management	Justification
		<p>with limited oversight by their broker might make this more urgent.</p> <p>This chapter expands upon the matters explored in Chapter Two because RTS 6 also dictates the systems and controls that sell-side investment firms must implement to offer direct electronic access.</p>
<p><b>Chapter Seven:</b> How effective are the enforcement activities of derivatives exchanges in the digital age? (Culley, 2024)</p>	<p>Accountability</p> <p>Detection</p> <p>Deterrence</p> <p>Punishment</p>	<p>Exchanges are crucial in detecting and deterring poor conduct in trading listed derivatives. Sell-side investment firms, their staff, and clients are far more likely to be disciplined by an exchange they trade on than a so-called national competent authority, i.e. a regulator. Nonetheless, exchange trading has changed considerably since 2007 because of technological and regulatory evolution. Though their roles have changed, humans remain crucial in market participants' trading operations.</p>

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Research question/chapter	Level(s) of conduct risk management	Justification
		<p>This chapter investigates whether exchanges' enforcement regimes have kept pace with the move from floor to remote trading, including the proliferation of algorithms. It capitalises on the preceding chapters. After all, RTS 6 governs the role of sell-side firms in acting as gatekeepers to DEA clients and internal actors seeking to trade on exchanges, including through the deployment of algorithms.</p>

These chapters have been published in peer-reviewed journals specialising in regulation and compliance. To complete the thesis, these substantive chapters are: (1) preceded by an overarching systematic literature review and methodology section (both also published (Culley, 2020a, Culley, 2020b)); and (2) succeeded by a conclusion that draws their contributions together, stipulates the overall limitations of the thesis and provides some directions for future research. The levels of conduct risk management referenced in the table above are used to structure the conclusion. It should be noted that the author decided to leave the substantive chapters in the form they were published. Each chapter-level literature review and methodology further develops its overarching “parents” to add context, identify specific gaps, and, where necessary, outline evolutions of research methods as initially conceived. This provides an audit trail that future researchers may find helpful in gauging what worked well and what did not.

The results of the research conducted for this thesis can be summarised as follows:

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- (1) employees' appreciation of conduct risk aligns with the values articulated in investment firms' public statements. Yet, these statements do not always reflect the FCA's current priorities, for example, taking non-financial misconduct. This suggests that some of the FCA's initiatives do not have a significant influence on brokerage and trading firms;
- (2) humans continue to play an essential function in firms' trading operations. However, their roles are changing as artificial intelligence grows in digital markets. Some characteristics of exchanges' enforcement programmes have slowly evolved with the shift from floor to remote trading. Even so, in certain respects, their approach to enforcement is, or should be, effective from a behavioural perspective;
- (3) generally, practitioners have a sound grasp of the obligations set out in RTS 6. In places, this is undermined by a poor understanding of algorithms (and related strategies). Accordingly, they have used "best efforts" to implement RTS 6. As time passes from initial implementation, the effectiveness of the firm's efforts to comply with RTS 6 could be undermined by a combination of fatigue, complacency, poor governance in international contexts, cost sensitivity, overreliance on external technical knowledge and the broad calibration of risk parameters; and
- (4) critical AT-related conduct-related messages promulgated by the FCA are not yet fully reflected in broker-dealers' compliance programmes. This is owing to a widespread belief that the types of algorithms deployed are straightforward, leading to limited consideration of their potential impact. Nonetheless, there is concern about how clients deploy algorithmic functionality embedded within the trading platforms supplied by broker-dealers. Current definitions of conduct risk are only concerned with the behaviour of financial intermediaries and their staff. MIFID II's AT provisions do not oblige firms to assess their clients' awareness of conduct risk. This is potentially a significant gap in the existing AT-related regulatory settlement.

This thesis makes several contributions to the literature. First, it broadens the investigation into the influence of corporate value statements on the behaviour of their staff. Second, to the best of the author's knowledge, it attempts the first qualitative

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inquiry into firms' implementation of MiFID II's AT regime. Third, it deepens insights into conduct risk emanating from AT and DEA. Finally, it analyses the effectiveness of exchange-level oversight through a behavioural lens instead of a legal lens that has traditionally been used.

In the next chapter, a systematic literature review explores how far existing research has sought to examine:

- the implications of algorithms supplanting human brokers and traders in the financial markets; and
- how firms and their regulators should adapt to mitigate conduct risks inherent in automated and hybrid business models.

In particular, the review assesses how far these questions have been answered in the context of FICC markets. It will be seen that parts of these represent 'final frontiers' for full automation, currently being characterised by a mixture of traditional (e.g. voice brokerage), hybrid (machine-human) and challenger (highly automated trading using sponsored access) techniques. Accordingly, they represent fertile ground to (a) gauge the tension that exists between these methods of trading and (b) test potential solutions to mitigate new forms of conduct risk.

## Chapter 2 Systematic literature review

### 2.1 Background

On 9<sup>th</sup> December 2019, the Senior Managers and Certification Regime (“SMCR”) entered into force for investment firms that are solely regulated by the Financial Conduct Authority (“FCA”) in the UK (2019d). Introduced in response to scandals that emerged during or after the 2007-08 financial crisis, a core objective of the SMCR is to improve the behaviour of financial sector workers through the introduction of a structured accountability regime, encompassing rules for conduct, certification and senior managers (Dawson, 2017). Many other jurisdictions have introduced, or are introducing, similar initiatives to mitigate risks associated with poor conduct, most notably the Hong Kong Managers-in-Charge Regime (Deloitte, 2017). Such initiatives show that human behaviour remains the focus of regulators’ attention in the post-crisis era. Conversely, financial markets are becoming increasingly automated.

That automation predominates in equity markets is well-documented (Stefanova, 2018). However, it will be seen that a small body of literature finds that increasingly sophisticated algorithms are starting to replace human traders and brokers in the origination of transactions across many other asset classes, too (Haynes and Roberts, 2019). Despite this, the FCA recently expressed concern that:

*“Some support and IT units and e-platform specialists stated that conduct risk did not apply to them. This was particularly unsettling given our own commentary as well as heavy press coverage on ‘conduct of the machine’ and the ethics issues related to Artificial Intelligence...”*

#### **FINANCIAL CONDUCT AUTHORITY (2020L)**

This is perhaps because, as the literature review in this chapter will attempt to demonstrate, the growth of automation and artificial intelligence in the financial markets has, to date, not directly been considered in the context of conduct risk, even if the literature indirectly identifies a host of conduct risks.



Moreover, this chapter aims to show that, within the existing algorithmic trading (“AT”) literature, fixed income, currencies, and commodities (“FICC”) markets have so far been in the shadow of research into AT in equities trading for historical reasons. These include a greater interest in controversial high-frequency trading because of famous non-fiction works such as *Flash Boys* (Lewis, 2015) (Borch, 2016); economies of scale, i.e. a more significant opportunity for the deployment of algorithms in highly liquid and fragmented markets (Haferkorn, 2017) and incentivisation by trading venues which wish to profit therefrom (Yadav, 2016). Nevertheless, the growth of AT in FICC markets is likely to accelerate in the aftermath of the COVID-19 outbreak, particularly as exchanges such as the London Metal Exchange (“LME”) were forced to trial the electronic price discovery of major benchmarks as a part of their business continuity measures (London Metal Exchange, 2020k).

This chapter's objective is to provide evidence that studying the identification and mitigation of conduct risks posed by AT in the context of the FICC markets represents a compelling opportunity to make an original contribution. This chapter proposes conducting research in this field.

The rest of this chapter is structured as follows: section 2.2 provides critical terms and definitions that will be used throughout. Section 2.3 surveys the AT literature, identifying key themes and opportunities for future research.

Substantive elements of this chapter were published as (Culley, 2020a) and (Culley, 2020b).

### **2.2. Key terms and definitions**

Several attempts have been made by legislators, regulators, market participants and academics to define the terms ‘algorithmic trading’ (“AT”) and ‘high-frequency trading’ (“HFT”). The definitions that are most relevant to the British and European contexts are found in Article 4(1) of MiFID II:

*“(39) ‘algorithmic trading’ means trading in financial instruments where a computer algorithm automatically determines individual parameters of orders such as whether to initiate the order, the timing, price, or*

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*quantity of the order or how to manage the order after its submission, with limited or no human intervention...;*

*(40) ‘high-frequency algorithmic trading technique’ means an algorithmic trading technique characterised by:*

*infrastructure intended to minimise network and other types of latencies, including at least one of the following facilities for algorithmic order entry: co-location, proximity hosting or high-speed direct electronic access;*

*system-determination of order initiation, generation, routing, or execution without human intervention for individual trades or orders; and*

*high message intraday rates which constitute orders, quotes or cancellations.”*

Investment firms are themselves defined in Article 4(1)(1) of MiFID II as:

*“any legal person whose regular occupation or business is the provision of one or more investment services to third parties and/or the performance of one or more investment activities on a professional basis.”*

Generally, investment firms engage in AT and/or HFT to make investment decisions for their own account or to execute client orders (2018b).

Other key terms used in this review include ‘conduct risk’, ‘artificial intelligence’ (“AI”), and ‘machine learning’ (“ML”).

The FCA decided to task investment firms with devising their definitions of conduct risk based on their business models (2017a). The leading industry textbook *Conduct Risk Management* offers the industry a description from a very human perspective:

*“Any behaviour by your staff that undermines trust or value in your business, and that a regulator says creates detriment to customers or a ‘disorderly market’. Includes managers’ inaction, in the form of failure to*

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*anticipate and overcome customers' own biases or ignorance during the product creation and sales processes.*"

**(MILES, 2017)**

Definitions of AI and ML are similarly absent from UK and EEA financial regulations at present. Therefore, following the approach of the Bank of England ("BoE") and the FCA in their joint report *Machine Learning in Financial Services* (2019c), the definitions employed by the Financial Stability Board ("FSB") are used in this review:

*"AI is the theory and development of computer systems able to perform tasks that traditionally have required human intelligence. AI is a broad field, of which 'machine learning' is a sub-category."*

*"ML may be defined as a method of designing a sequence of actions to solve a problem, known as algorithms, which optimise automatically through experience and with limited or no human intervention."*

### **FINANCIAL STABILITY BOARD (2017C)**

The joint BoE and FCA report highlights that AI and ML are increasingly used in trading algorithms, which could have significant conduct implications.

## **2.3 The literature review**

A systematic literature review was performed to:

- (i) obtain an insight into the literature that has been written in the subject area in terms of critical themes, perspectives and differentiators;
- (ii) identify potential gaps in the existing literature that could be addressed in future research; and
- (iii) obtain an insight into typical research methods other researchers in the field are using.

## **2.4 Search methodology**

The systematic literature search was conducted in three stages that were conducted concurrently.

### 2.4.1 Stage one

First, the key title and abstract search terms listed in **Table 2.1** were entered into five databases on 4<sup>th</sup> May 2019 and subsequently updated on 17<sup>th</sup> November 2019 (to add SSRN to include unpublished papers), 16<sup>th</sup> August 2020 and 6<sup>th</sup> December 2020. A date range of 6<sup>th</sup> May 2010 to the present day was set for the searches. The 6<sup>th</sup> of May 2010 was the day the ‘Flash Crash’ occurred on US equity markets (Akansu, 2017), something which is widely credited for triggering the surge in academic and regulatory interest in AT and HFT and associated risks across the world (Gomber et al., 2011).

**Table 2.1** *Literature review: consolidated database raw search results*

Search terms	Business Source Premier	Hein Online	Lexis Nexis	PhilPapers	Westlaw	Web of Science	SSRN
"algorithmic trading" OR high-frequency trading"	520	29	71	21	60	102	113
"conduct risk"	5	7	37	0	28	340	19
"artificial intelligence" AND "ethics" OR "conduct"	13	90	0	1	22	6	12

Many papers in the initial search and subsequent update rounds were automatically excluded because they were out of scope.

### 2.4.2 Stage two

Second, returned papers were screened per the exclusion criteria set out in **Table 2.2**.

**Table 2.2** *Exclusion criteria*

Exclusion criteria	Theoretical/empirical rationale
The article is obviously out of scope.	For example, an article about using algorithms in the criminal justice system was disregarded without further enquiry. The rationale was to maintain focus and save time.
Abstract indicates subject matter that is of little or no relevance to AT/HFT conduct risk	For example, the article primarily concerns designing a specific algorithmic model for profit enhancement. Rationale: whilst in the same ‘universe’, too niche to be of benefit.
The subject matter is relevant, but the article was not written in the EU, US, or UK context.	For example, the article considers efforts to curtail AT/HFT-related market abuse in Japan. Rationale: risks making the study too broad and a threat that most relevant articles published in such third countries would be missed because they are not written in English, German or French, potentially skewing the review.

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<p>The article fails basic quality control.</p> <p>Article influence = Scientific Journal Rankings (“SJR”) journal ranking (if published) x number of Google Scholar citations/year of publication score (2020(1)-2010(11) = 0)</p> <p>N.B.: the influence of older articles was diluted by progressively higher-ranking yearly scores. These ranking scores were then used to divide the output of the SJR ranking by the number of Google Scholar citations to protect newer articles from more extended opportunities for publication bias. In addition, the SJR ranking element was not used to calculate the influence of working papers to ensure they were not unfairly disadvantaged.</p>	<p>Rationale: the article has not proved influential enough to be cited by other authors.</p> <p>To determine this, an influence score was assigned to each article reviewed. This was based upon:</p> <p>(i) a journal’s SJR ranking, described as: “a prestige metric based on the idea that "all citations are not created equal." With SJR, the subject field, quality and reputation of the journal have a direct effect on the value of a citation”(Undated-l); and</p> <p>(ii) the number of Google Scholar citations, selected because Google Scholar is said to have greater coverage than peers such as Web of Science and Scopus (Undated-a).</p> <p>The prestige of a journal is essential to many in academia. Yet, highly cited articles frequently appear in lower or unranked journals. This is especially the case in emerging disciplines or topics for academic research, such as conduct risk and even financial compliance, more generally. Accordingly, multiplying the SJR ranking with the number of Google Scholar citations was to balance the prestige of a journal and an article’s popular appeal.</p>
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Not an article, e.g. a legislative instrument, legal case, or professional factual update	Rationale: these items are not analytical and do not contribute to debate.
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The original database search was initially limited to papers in the context of the FICC market. However, this limiter was abandoned because it returned too few HFT/AT-related papers.

Some papers excluded from the qualitative synthesis in the initial search round were subsequently included, e.g. because the journal in which they were published had received an SJR ranking in the intervening period before a subsequent update round.

### 2.4.3 Stage three

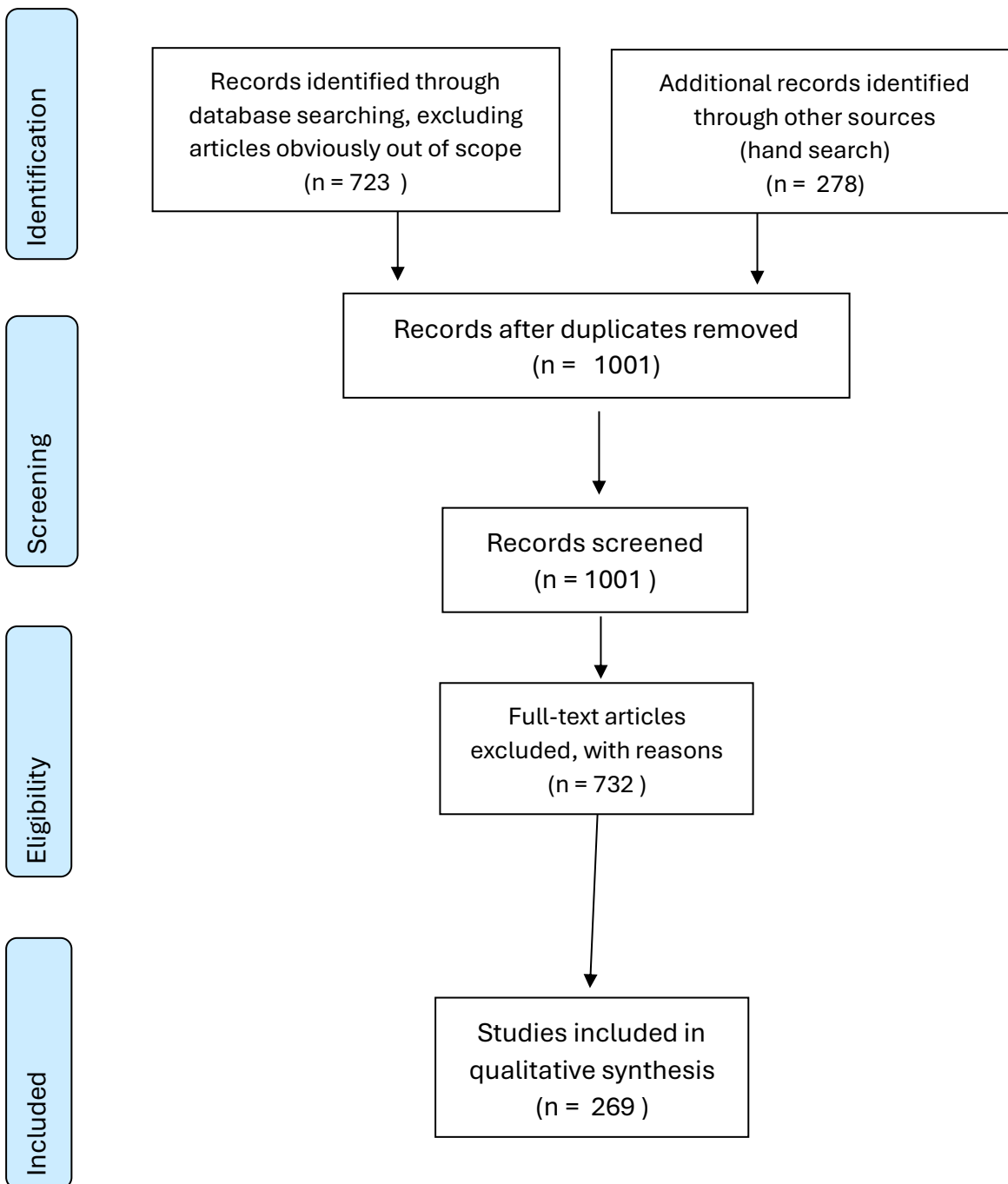
Third, an extensive hand search of the bibliographies of returned in-scope papers was conducted to capture any articles not returned by the database searches. This technique was potent, taking the total number of papers screened to 1001. This stage included:

- (i) browsing of hyperlinked bibliographies in the Phil Papers database, something that proved more effective than using the search functionality in this database; and
- (ii) recovering papers identified through the hand search but unavailable on the SSRN through general internet searches, e.g., Google.

The hand search phase was quality control over the excluded articles because they were obviously out of scope. The bibliography of every record screened was checked to ensure no potentially in-scope papers were missed.

An overview of the search and quality control process is provided in **Figure 2.1**.

**Figure 2.1** PRISMA overview of final search results and quality control



## 2.3 Results

### 2.3.1 Overview

Previous systematic analyses of AT and HFT literature pool studies by themes. The US Securities and Exchange Commission (2014c) and Chung and Lee (2016) focus on market



quality. Gomber et al.(2011) use two additional categories: market fairness and profitability. This review uses these as methods of classification.

This chapter builds upon these existing categorisation methods by introducing two additional clusters: culture and machine ethics. These clusters incorporate papers written explicitly in the AT context but deliberately seek to broaden the debate. Literature that addresses behavioural risk and accountability for both human and non-human actors is considered to forecast potential conduct risk issues in future AT business models.

Given the large number of studies in the qualitative synthesis, the 10 most influential papers per theme (as of 14 December 2020) have been selected to represent each cluster. A small selection of papers that do not fall into each cluster are also considered, where they significantly contribute to the present discussion.

### 2.3.2 Cluster one: market quality

**Table 2.3** *Market quality papers – influence scores (top 10 as of 14th December 2020)*

Paper title	Year	Authors	Geography	Asset class	Influence score
The Flash Crash: High-Frequency Trading in an Electronic Market.	2017	Kirilenko, Kyle, Mehrdad and Tuzun	US	Equities	4346.73
The High-Frequency Trading Arms Race: Frequent Batch Auctions as a Market Design Response	2015	Budish, Cramton, Shim	US	Equities	3404.68
Does Algorithmic Trading Improve Liquidity?	2011	Hendershott, Jones, Menkveld	US	Equities	2648.29
HFT and price discovery.	2014	Brogaard, Hendershott, Riordan	US	Equities	1854.46
Rise of the Machines: Algorithmic Trading in the Foreign Exchange Market.	2014	Chaboud, Chiquoine, Hjalmarsson, Vega	General	FX	1612.66

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Competing on Speed.	2018	Pagnotta, Philippon	US	Equities	1043.46
High-Frequency Trading and Market Performance.	2020	Baldauf, Mollner	General	Equities	548.16
High-frequency trading and extreme price movements.	2018	Brogaard, Carrion, Moyaert, Riordan, Shkillo, Sokolov	General	General	532
Trading Fast and Slow: Colocation and Liquidity.	2015	Brogaard, Hagstromer, Norden, Riordan	Sweden	Equities	378.78
High-frequency quoting, trading, and the efficiency of prices.	2015	Conrad, Wahal, Xiang	General	General	340

Papers in the market quality cluster (**Table 2.3**) are characterised by the deployment of quantitative methodologies to investigate the effects of AT on price discovery and liquidity (Brogaard et al., 2018).

Kirilenko et al. (2017) use S&P 500 data to probe changes in HFT inventories during the Flash Crash. Their study finds that HFTs disproportionately take the best prices, fleeing during periods of high volatility, creating a liquidity vacuum. This study supports legislative initiatives proposed by Conrad et al.(2015) to tie ATs to market-making obligations to deter such conduct. These would inspire Articles 17(3) and (4) of MiFID II. Conversely, Brogaard et al. (2014) argue that such measures unfairly discriminate between computer and human traders. This is because (i) the latter had never been subject to market-making obligations, and (ii) no evidence of a link between HFT and market abuse was found in their study.

Hendershott et al. (2011) echo the misgivings of Kirilenko et al. regarding the benefits of AT in fragile markets. Furthermore, they cite an arms race in speed as a potentially harmful by-product of improvements to liquidity and price discovery in large-cap equities. Baldauf and Mollner (Forthcoming) build on this, suggesting that the presence

of high-speed traders could incentivise lower frequency traders (“LFT”) to invest in fundamental analysis.

Budish et al. (2015) propose frequent batch auctions to dissuade HFT firms from engaging in this behaviour, which they argue stems from ill-conceived market construction. They also assert that the non-sequential receipt of orders also eradicates opportunities for HFT firms to ‘pick off’ slower market participants, probably the most controversial conduct associated with AT, which is heavily criticised in Michael Lewis’s bestseller *Flash Boys* (2015). Still, despite such controversy, Bernile et al. (2016) find no evidence that HFT firms ‘front run’ news announcements, casting doubt on the necessity of implementing measures such as those proposed by Budish et al.

Modelling the impact of regulations, competition between trading venues and the requirements of market participants, Pagnotta et al. (2018) also subscribe to the view that market design is at the root of concerns associated with HFT, rather than anything inherently problematic with HFT itself. They aver that the fragmentation encouraged by regulations such as the first Markets in Financial Instruments Directive (“MiFID I”) was positive in ending monopolies but that vast differences in the infrastructures of trading venues can be exploited. This is exemplified in Brogaard et al. (2015) who demonstrate the dividends reaped by early adopters of colocation services on the NASDAQ OMX. These included lower inventory costs and reduced adverse selection by informed traders. Again, MiFID II targeted this market-wide conduct by requiring venues to provide non-discriminatory access to colocation (enshrined in Article 48(12)(d)).

Chaboud, A. P. et al. (2014) claim to have written the first paper on the effects of AT in the foreign exchange (“FX”) markets, echoing the findings of equity markets concerning market quality. The authors explore whether strategy imitation conduct identified in the equities markets by studies such as those undertaken by Biais and Woolley (2012) is harmful to FX trading. A reduction in arbitrage opportunities is observed; the authors admit that their findings are inconclusive owing to a lack of data.

To summarise, significant controversy remains in this cluster regarding whether AT’s conduct benefits or harms markets.

## 2.3.3 Cluster two: culture

**Table 2.4** *Cultural papers – influence scores (top 10 as of 14th December 2020)*

Paper title	Year	Authors	Geography	Asset class	Influence score
Business culture and dishonesty in the banking industry	2014	Cohn, Fehr, Marechal	General	General	1093.89
The Corporate Psychopaths Theory of the Global Financial Crisis	2011	Boddy	General	General	58.11
Material Signals: A Historical Sociology of High-Frequency Trading	2018	MacKenzie	US	Equities	50.18
How Algorithms Interact: Goffman's 'Interaction Order' in Automated Trading	2019	MacKenzie	US	Equities	42.93
Giving Voice in a Culture of Silence. From a Culture of Compliance to a Culture of Integrity	2010	Verhezen	General	General	32.95
The Credit Crisis and the Moral Responsibility of Professionals in Finance	2011	Graafland, van de Ven	General	General	27.18
High-frequency trader subjectivity: emotional attachment and discipline in an era of algorithms	2017	Borch, Lange	General	General	25.36
Markets, bodies, and rhythms: A rhythm analysis of financial markets from open-outcry trading to high-frequency trading	2015	Borch, Bondo Hansen, Lange	General	General	24.57
A Material Political Economy:	2017	MacKenzie	US	Equities	23.27

Paper title	Year	Authors	Geography	Asset class	Influence score
Automated Trading Desk and price prediction in High-frequency Trading					
Social Media, Financial Algorithms, and the Hack Crash	2016	Karppi and Crawford	US	General	21.70

Studies in this cluster (**Table 2.4**) typically employ case studies and ethnographic methods (e.g., interviews and observations) to investigate the social influences that mould conduct in traditional and computerised financial institutions.

Using an incentive-skewed questionnaire, Cohn et al.(2014) find a very high propensity of bank employees to engage in dishonest conduct. Boddy (2011) is similarly scolding the quality of human capital in financial institutions, arguing that an aggressive merger culture in the early 2000s spawned disloyal and dysfunctional leaders whose behaviour was the cause of the 2007-08 financial crisis. Graafland et al.(2011) build on this narrative by asserting that conduct during this period was the product of a de-regulatory movement that championed the pursuit of profit above all else. Verhezen (2010) conceives a framework to improve human conduct in the financial sector, centred on openness and countering fear. This approach avoids interpreting conduct in accordance with black-letter regulations, as these presume that humans are always rational actors, which is considered unrealistic.

In contrast to the human-centred cultural literature, MacKenzie (2019) examines interactions between trading algorithms. He finds that imitation and deception are forms of conduct as prevalent in fully computerised trading as in markets where humans predominate. This particularly underpins competition between HFT and execution algorithms (MacKenzie, 2018b). In an early study, MacKenzie (2017) explores how confrontations between market incumbents and disruptive AT and HFT forge a creative tension that generates new risks and opportunities. By extension, Borch et al. (Borch et al., 2015) evidence that the behaviour of human actors in the financial markets is increasingly being shaped by the presence of algorithms, something which is later found to be blurring traditional front-middle-back office roles (Borch and Lange, 2017a). Karppi

and Crawford (2016) Use the ‘Hack Crash’ as a case study to consider the risks posed by this new coexistence between algorithms and humans. On 23rd April 2013, hackers hijacked the official White House Twitter account and tweeted that President Barack Obama had been injured in a terrorist attack. This deceived many news-reading algorithms and triggered a market sell-off.

Overall, the articles in this cluster suggest that human emotion's unpredictability is gradually being supplanted by algorithms' ruthless and sometimes erratic conduct.

### 2.3.4 Cluster three: market fairness

**Table 2.5** *Market fairness papers – influence scores (top 10 as of 14th December 2020)*

Paper title	Year	Authors	Geography	Asset class	Influence score
High-frequency market microstructure.	2015	O’Hara	US	Equities	818
What’s Not There: Odd Lots and Market Data.	2014	O’Hara	US	Equities	342.6
Do high-frequency traders anticipate buying and selling pressure?	2019	Hirschey	EU	Equities	98.5
Fairness in Financial Markets: The Case of High Frequency Trading.	2013	Angel, McCabe	General	General	23.88
The externalities of high-frequency trading	2013	Ye, Yao, Gai	US	Equities	20.25
The microgeographics of global finance: high-frequency trading and the construction of information inequality	2017	Zook and Grote	General	General	17.3
Time, trading, and algorithms in financial sector security	2017	Thompson	General	General	10.93

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The Mysterious Ethics of High-Frequency Trading	2016	Cooper, Davis, Van Vliet	General	General	10.64
Toward a fully continuous exchange	2017	Kyle and Lee	General	Equities	10.29
What to Do about High-Frequency Trading?	2013	Harris	General	General	7.95

Articles in this cluster (**Table 2.5**) use a mixture of qualitative and quantitative approaches to contemplate whether market structure design is more critical than regulating the conduct of AT firms themselves.

O'Hara (2015) surveys the then-existing literature and concludes that incentives offered to HFT firms by trading venues, together with an unreliable consolidated tape (small, odd lot transactions are omitted (O'Hara et al., 2014)), create a new form of adverse selection based on speed rather than information. Hirschey (2019) finds that HFT firms impose costs on slow traders using order flow anticipation strategies. Ye et.al.(2013) advocate abolishing the time priority afforded to order flow to deter this and conduct designed to slow down competitors, e.g. quote stuffing. Harris (2013) also proposes a time delay, claiming that this will not unfairly disadvantage HFT and eliminate its liquidity benefits. Similarly, Kyle and Lee (2017) provide evidence to support a fully continuous exchange, contending that this would eliminate the speed advantages that fuel HFT at the expense of LFTs.

Angel and McCabe (2013) concur that manipulative strategies must be countered. However, they assert that efforts to achieve 'equality of outcome' are misguided because HFT firms have made existing trading strategies faster. Consequently, Angel and McCabe stress that the key to tackling perceptions of fairness is to ensure that co-location is offered on a non-discriminatory and transparent basis, a proposal the EU adopted in Article 48(8) of MiFID II. Zook and Grote (2017) agree, emphasising that geographical proximity has always conferred an advantage in trading, e.g. brokers previously paid a premium to participate in open outcry markets. Thompson (2017) partially disagrees, insisting that co-located firms forfeit the benefit of taking time to scrutinise information. Thompson also declares that many people fear HFT because they do not understand it.

Cooper et al. (2016) further assert that LFTs actively seek to impose regulatory costs on HFT firms because they are reluctant to make significant investments in their infrastructure, making them susceptible to the so-called ‘deceptive’ HFT strategies performed on public trading venues.

### 2.3.5 Cluster four: machine ethics

**Table 2.6** *Machine ethics papers – influence scores (top 10 as of 14th December 2020)*

Paper title	Year	Authors	Influence score
How the machine thinks: understanding opacity in machine learning algorithms	2016	Burrell	532.35
The ethics of algorithms: mapping the debate	2016	Mittelstadt, Pallo, Taddeo	407.55
Governing algorithms myth, mess, and methods	2016	Ziewitz	94.16
Ethical Implications and Accountability of Algorithms	2019	Martin	91.60
Wendell Wallach and Colin Allen: Moral machines: teaching robots right from wrong	2010	Beavers	81.04
Of, for, and by the people: the legal lacuna of synthetic persons	2017	Bryson, Diamantis, Grant	43.66
Bearing accountable witness to the ethical algorithmic system	2016	Neyland	33.27
Legal personality of robots, corporations, idols, and chimpanzees: a quest for legitimacy	2017	Solaiman	32.19
Artificial Intelligence Crime: An Interdisciplinary Analysis of Foreseeable Threats and Solutions	2019	King, Aggarwal, Taddeo, Floridi	20.21
Remedies for robots	2019	Lemley, Casey	17.82

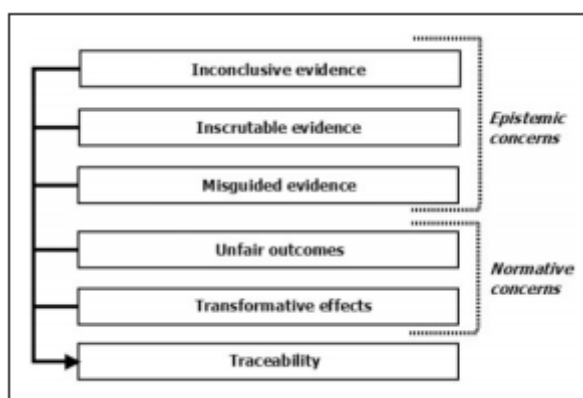
Articles falling within the machine ethics cluster (**Table 2.6**) are typified by an interpretivist epistemology that draws upon theoretical approaches to investigation. They



tend to have a much broader focus than just finance, seeking to understand the impacts of algorithms and artificial intelligence in the wider world.

Ziewitz (2016) summarises public concerns about the role of algorithms in society. These include bias, discrimination, fairness, accountability, and visibility. He also describes the principal solutions to these concerns: transparency, ethical design, training, review, and reverse engineering. Burrell (2016) builds on this by identifying three types of algorithmic opacity: intentional (e.g., to protect corporate secrets), technical (e.g., inability to interpret without specialist skills), and output (e.g., a machine learning algorithm may evolve in a way that is also unintelligible to its designers). Mittelstadt et al. (2016) propose a conceptual map to help orientate debates concerning the ethical deployment of algorithms, based on a review of works such as those produced by Ziewitz and Burrell (see **Figure 2.2**).

**Figure 2.2** *Diagram from Ziewitz and Burrell illustrating concerns related to algorithms*



Martin (2018) takes the position that human designers of algorithms must be held accountable for the conduct of their models, as adopted by the SMCR. This is because, it is stated, algorithms are infused by the values of their inventors (Kraemer et al., 2011). It is for this reason that Neyland (2016) urges businesses to use algorithms to ensure they are scrutinised by an ethics board before deployment. Indeed, coders are generally not well-versed in legal concepts (Lemley and Casey, 2019). Bryson et al. (2017) further state that the law should never permit artificial agents to become 'liability shields' for humans to engage in poor conduct. King et al. (2020) support this stance, averring that military commanders are still held responsible for the conduct of their troops. Furthermore, regulation generally seeks to deter poor conduct by the threat of sanction, something to

which artificial actors are unlikely to respond (Lemley and Casey, 2019). Solaiman (2017) concurs, averring that robots are not yet advanced enough to be ascribed legal personality. Accordingly, Solaiman argues that liability for the misconduct of artificial agents should ultimately be attributed to their creators and controllers, such as how directors are held responsible for the failings of their companies. Beavers (2010) reviews Wendell Wallach and Colin Allen's book on moral machines, wherein the authors disagree with the researchers above, stating that a day is coming when humans will want to ascribe moral responsibility to machines. Wallach and Allen suggest a 'hybrid' approach to installing ethical values into machines, i.e. a combination of 'top-down' rules and 'bottom-up' learning.

In summary, the machine ethics cluster is this review's most immature but rapidly developing category. This arguably makes it a rewarding source for researchers seeking to understand how conduct risk is evolving in the financial sector.

### **2.3.6 Other noteworthy papers**

A few papers (i) do not fit into the abovementioned categories, or (ii) have yet to gain significant influence because they were recently published and made some interesting contributions.

Although not specific to AT, Kitchin (2017) offers a consolidated list of methodologies that researchers can deploy when studying algorithms.

Arnoldi (2016) asks whether algorithms deceiving each other is a form of market abuse, especially where a human actor would not have been duped.

Haynes and Roberts (2015) inquire about the prevalence of AT in CME FICC futures products using data from November 2011 to October 2014. AT was present in 38.1% of trades in agricultural contracts, 46.5% in metals contracts, and 79.9% in FX contracts. By 31st October 2018, these figures had risen to 55.5% of trades in agricultural contracts, 67.6% of trades in metals contracts and 84.4% of trades in FX contracts (Haynes and Roberts, 2019).

More recently, several researchers have sought to examine how this growing presence of AT in FICC markets is influencing their structure. Seddon (2020) investigates how the

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entry of banks and investment firms has driven the financialisation of the LME since the 1990s, a hitherto producer-oriented market. Seddon identifies that this cumulated in Jump Trading LLC becoming the first HFT firm to join the LME in June 2017, much to the chagrin of many traditional members and users of the market. Comparably, Marcus and Kellerman (2018) question why the proliferation of automated trading in global spot FX markets has received so little attention from researchers, given that it poses similar conduct challenges. They conclude that this is because, in contrast to trading on equity exchanges, most FX data is proprietary and, therefore, not publicly available. Conversely, MacKenzie (2020) finds that HFT has struggled to gain a foothold in trading liquid sovereign bonds because of political constraints. In particular, national governments are reluctant to relinquish control over their ability to secure debt financing, so they prefer to impose obligations on a small number of primary dealers (typically large investment banks). Furthermore, he finds that these primary dealers are equally unwilling to surrender their unique privileges to challengers.

Several researchers are now starting to examine the effectiveness of the AT regime in MiFID II and seek to make proposals for improvements to the legislation. McGroarty et al. (2019) recommend that policymakers encourage the adoption of agent-based modelling to assess that trading strategies meet the requirements of MiFID II (particularly in terms of stability and robustness) before they are deployed. Pereira (2020) contends that the AT regime in MiFID II is deficient because it excludes order routing algorithms from the regulatory perimeter. Pereira claims that simple algorithms could sometimes pose greater operational and systemic risks to markets than their more complex counterparts and that the EU should reconsider their exclusion.

Koulu (2020) declares that the EU's efforts to regulate 'algorithmisation' and artificial intelligence in general are too 'anthropocentric'. He cites findings that humans perform poorly as overseers of automated technology to support his case.

Lastly, Currie and Seddon (2017b) implore scholars to broaden research into AT from the quantitative modelling of HFT activity. They encourage researchers to focus on the challenges posed to financial regulation by increasingly robotic trading strategies that cast doubt on the ability to hold humans accountable for issues.

## 2.4 Discussion

### 2.4.1 Summary of findings

The literature has identified the following conduct risks that are inherent in AT business models:

- a) manipulative: strategies and behaviours that deliberately seek an unfair advantage over other market participants:
  - quote stuffing: *“rapidly submitting and cancelling large orders in order to flood the market with quotes requiring processing by competitors, and thus ensures that the competition loses its high-frequency trading edge”* (2017b);
  - layering and spoofing: *“submitting multiple orders often away from the touch on one side of the order book with the intention of executing a trade on the other side of the order book. Once that trade has taken place, the manipulative orders will be removed”* (2014a);
  - banging the close: *“A manipulative or disruptive trading practice whereby a trader buys or sells a large number of futures contracts during the closing period of a futures contract (that is, the period during which the futures settlement price is determined) in order to benefit an even larger position in an option, swap, or other derivative that is cash settled based on the futures settlement price on that day.”* (Undated-m);
- b) structural: behaviours that are “lawful but [potentially] awful” (Miles, 2017) because they exploit market flaws:
  - ‘picking off’ slower market participants;
  - arms race: *“...to be ever-so-slightly faster to react to new public information, and harm investors”* (Acquilina et al., 2020);

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- liquidity flight: *“Rather than work hard to unload large portfolios of securities in a deteriorating market, high-frequency traders can instead exit rapidly... such exits foment sudden drops in market liquidity, forcing markets to adopt an emergency footing”* (Yadav, 2016);
- c) imitative: AT behaviours that copy each other, not necessarily with an intent to cause harm to other market participants, but which may result in harm occurring, possibly because of a lack of skill, care, and due diligence:
- herding: *“herding results from an obvious intent by investors to copy the behaviour of other investors”* (Bikhchandani and Sharma, 2000);
  - feedback loop: *“the effect of a small change looping back on itself and triggering a bigger change, which again loops back and so on within well-intentioned management and control processes can amplify internal risks and lead to undesired interactions and outcomes”* (2012b);
- d) hybrid: situations where human and AT behaviours combine to undermine trust and confidence in the markets:
- ‘hack crashes’ and other forms of deception, e.g. prompted by human social media posts but acted upon by algorithms.

### 2.4.2 Recommendations for practice

The literature makes the following recommendations to address the risks identified above, most of which have already been adopted by regulators, e.g. the FCA in its paper *Algorithmic Trading Compliance in Wholesale Markets* (2018b).

- a) human culpability, e.g. holding developers responsible in the SMCR;
- b) designed in ethics, using a variety of ‘top-down’ (designer installed) and ‘bottom-up’ (self-learning) approaches to steer AI towards positive conduct;
- c) training, especially for control function staff who are unlikely to be as proficient in code and strategies as algorithm designers and programmers;
- d) review and testing, e.g. AT firms using a ‘sandbox’ to trial models in advance of trading;
- e) reverse engineering, ‘lifting the lid’ on black boxes through an audit trail documenting changes to code;
- f) governance, e.g. AT firms creating an oversight committee to ensure models are approved by senior management before release into production; and
- g) re-design the market structure, e.g., incorporate ‘speed bumps’ at trading venues to create a level playing field between fast and slow traders.

### 2.4.3 Strengths / limitations of literature

A significant strength of the literature is that it is very current. This is because the considerable enquiry into AT did not occur on a substantial scale until after the Flash Crash. Conversely, the subject matter constantly evolves, so gaps are always likely to be present.

The literature is methodologically diverse.

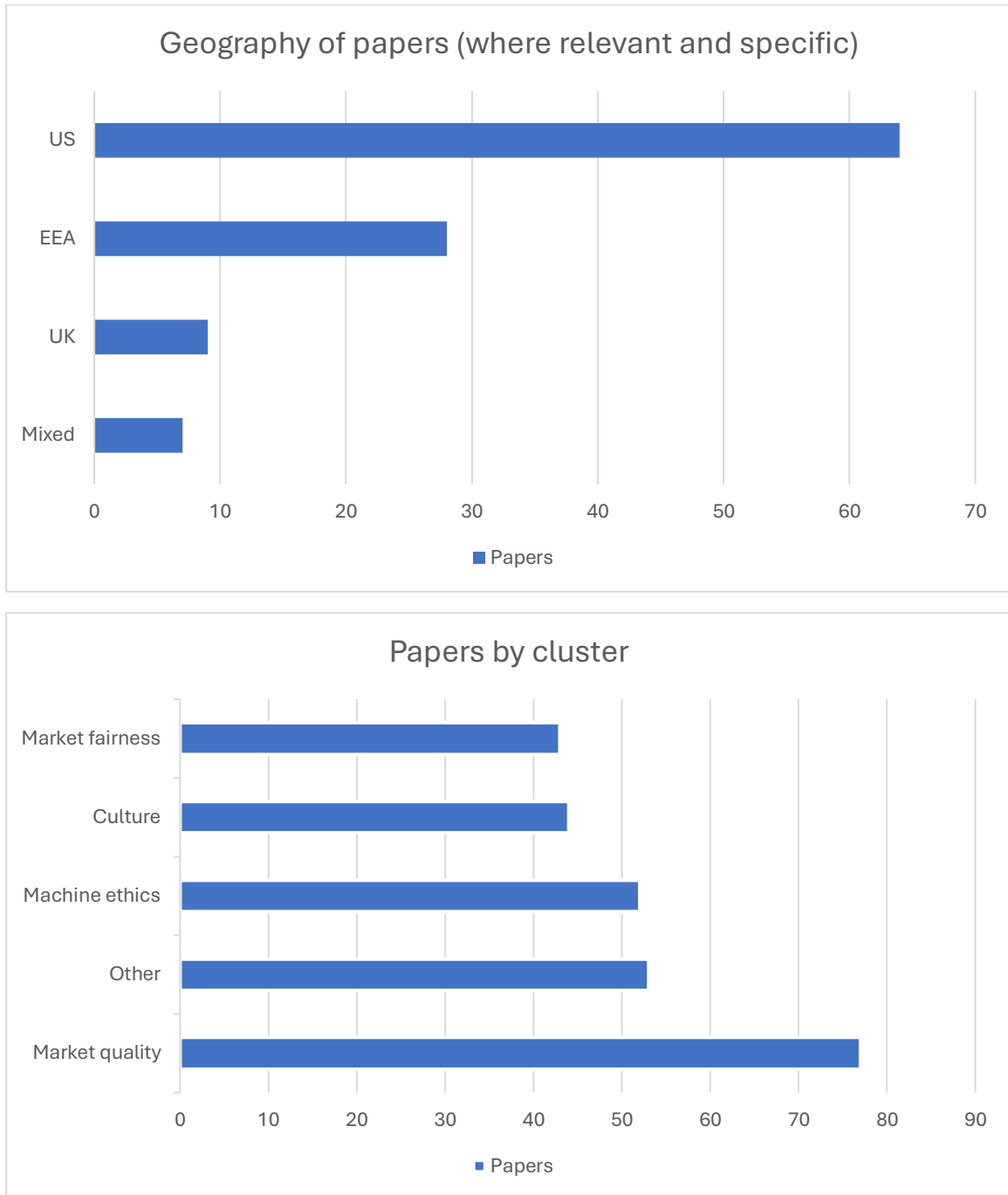
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Articles written on market quality and market fairness tend to employ quantitative methodologies. This is because they seek to prove or disprove whether the presence of AT is, for example, positive or harmful for liquidity or best execution. Naturally, such studies are always limited by the amount and quality of data available. This challenge is particularly acute regarding HFT, as firms are reluctant to release their data to protect their trade secrets. This situation may improve in the UK and EU with the implementation of MiFID II, which requires firms to indicate whether they use AT techniques in transaction reports. Despite this, the findings of the studies in these areas have been consistent to date, albeit with camps of differing opinion.

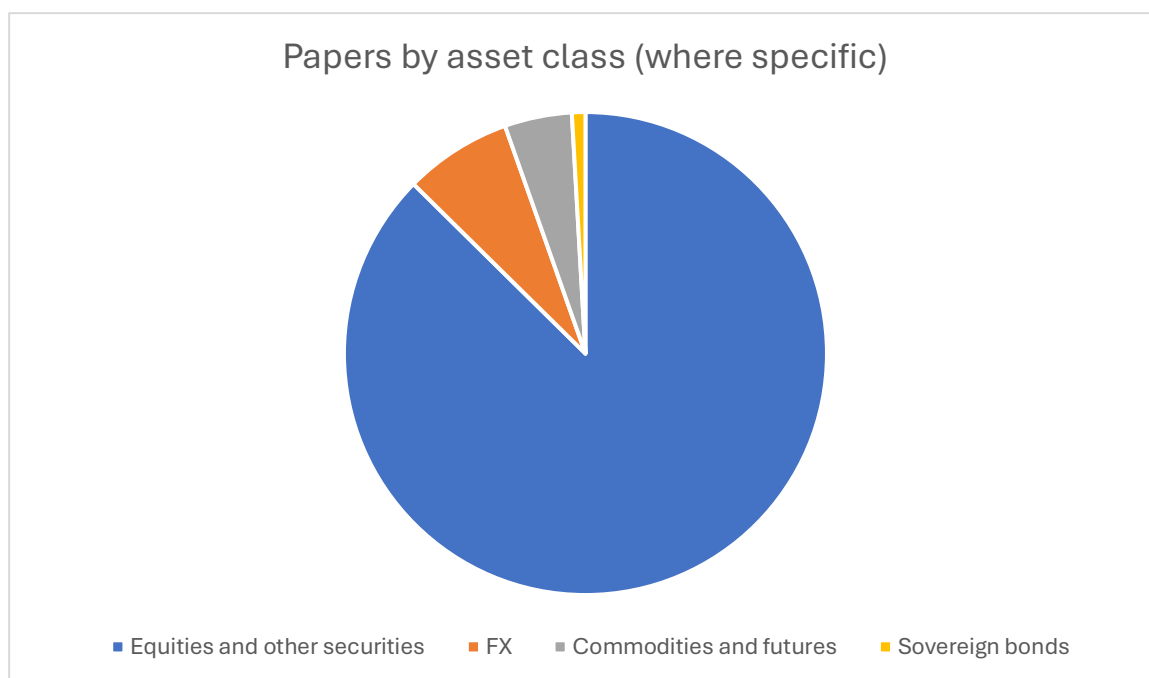
By contrast, the cultural-themed papers use case studies with ethnographic and interview techniques to understand AT in its social context. Again, researchers have admitted that secrecy is a problem. Additionally, these investigations are limited because a human cannot interview an algorithm, which skews findings to the human experience. Moreover, the machine ethics literature is almost exclusively a priori in nature. While this permits researchers to imagine alternate futures, there is little certainty that these will ever become a reality.

As charts in **Figure 2.3** shows most of the AT literature has focused on US equities markets. Hence, there is a gap in the literature that needs to be addressed, underlined by the FICC Market Standards Board's ("FMSB") claim that: "*the use of computer algorithms to facilitate trading in FICC markets has increased significantly in recent years, and has the potential for this activity to adversely impact the market and firm stability and harm market participants*" (2020i) and the evidence provided by Haynes and Roberts in their studies into the presence of automated trading on US futures markets.

**Figure 2.3** Paper statistics (as at 14th December 2020)







**Source:** author's own research.

Finally, dedicated research into conduct risk as a subject, regardless of financial industry sub-sector, has thus far been scant. Searches for the term 'conduct risk' in Business Source Premier, Web of Science, Westlaw, Hein Online, Lexis Nexis and Phil Papers between 4<sup>th</sup> May 2019 and 14<sup>th</sup> December 2020 only returned 15 articles (excluding editorials) with this term or similar term in their title. These are listed in **Table 2.7**.

**Table 2.7** *Papers that directly consider conduct risk (as of 14th December 2020)*

Title	Author	Year	No. of Google Scholar citations
Regulating the conduct of financial institutions in Australia: is culture the new frontier of regulation?	Adams, Borsellino and Young	(2017)	1
Conduct risks are now a prudential concern.	Alexander	(2014)	0
Regulators push banks to take the lead on addressing conduct risk	Alexander	(2016)	0
The Financial Conduct Authority and financial conduct: hand in glove?	Baber	(2015)	0
Why is managing conduct risk critical for a firm's board?	Baijal	(2018)	1
The challenge of assessing and shaping bank conduct,	Connell	(2017)	2

Title	Author	Year	No. of Google Scholar citations
ethics, and culture: Insights from the social sciences.			
Conduct risks and their mitigation in algorithmic trading firms: A systematic literature review.	Culley	(2020a)	0
Conduct risk: meaning, interpretation and dissension	de Pascalis	(2019)	0
Conduct, reputation, and control.	Imeson	(2014)	0
Legal and Conduct Risk in the Financial Markets: Third Edition Book Review	Johnston	(2019)	0
Assessing conduct risk: a new challenge for sustainable corporate governance	Manes	(2019)	0
Misconduct in banks: approaching the issue from a systemic perspective	Minto	(2016)	0
A practical approach to culture and conduct risk management	Ross	(2019)	0
Benchmarked and comparative conduct risk reviews: fit for future purpose	Stears, McCormick	(2015)	0
Data key to managing conduct risk.	Szehofner and Mallem	(2017)	0

Most of these articles are short pieces written in professional periodicals such as the *Banker* or *Company Lawyer* rather than substantive research papers. Consequently, there is considerable scope for researchers to develop this nascent discipline.

#### 2.4.4 Directions for future research identified by the literature review

*"More longitudinal research on financial regulation is needed to disentangle institutional and individual trading patterns that signal dishonest behaviour, recognising that algorithmic (robot) trading strategies displace 'humans' from direct accountability"*

**(CURRIE AND SEDDON, 2017B)**

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To date, research has made significant progress in:

- a) clarifying potential conduct problems associated with algorithms that are designed and maintained by humans in business models active in the equities markets and
- b) suggesting practical solutions to these problems, many of which have found themselves in legislation or regulatory guidance.

Notwithstanding the above, to the best of the author's knowledge, some significant gaps remain in the literature that could be addressed in future research. These include:

- a) considering what new conduct risks could evolve as trading becomes more machine-led;
- b) investigating what steps investment firms active in the FICC markets should take to future proof their business models; and
- c) considering whether machines regulating machines could eliminate the conduct risks that have haunted human markets.

### **2.5 Theoretical positioning**

Several influential theories in financial regulation, including behavioural economics, principles-based regulation, and regulatory arbitrage, informed the conduct of this study.

Behavioural economics exerted a considerable impact on financial regulators in the aftermath of the 2007-08 financial crisis (Miles, 2017). Behavioural economists reject the assumption that participants in financial markets are rational actors. Instead, they posit that heuristics often inform decision-making (Kahneman, 2011). For example, when faced with volatile market conditions, traders must make split-second decisions using “rules of thumb” (2014g). This can lead to sub-optimal or unethical outcomes as actors seek to take “shortcuts” (De Pascalis, 2019). Consequently, regulators sought to improve conduct by designing “nudges” into regulations, their supervisory programmes and firms’ cultural frameworks (Miles, 2021a). Nudges seek to steer behaviour towards desired outcomes rather than relying upon coercion (Thaler and Sunstein, 2009).

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Closely related to the application of behavioural economics in financial regulation is the theory of principles-based regulation (Black, 2008). The UK regulatory system has often been contrasted to that of the US (Frantz and Instefjord, 2015). This is because the FCA regularly draws upon its Principles for business conduct rather than detailed rules to discipline bad actors (2024a). Principles-based regulation offers a regulator a great deal of flexibility, particularly in the context of rapid technological advances. Such advances can outpace detailed rules. Loopholes can quickly develop but take lengthy periods to close because of cumbersome legislative processes (Decker, 2008). Whilst such developments should not outflank a principles-based system, the trade-off is reduced certainty for market participants (Black, 2007).

Actors might engage in regulatory arbitrage if a regulatory system is too prescriptive or uncertain (Pollman, 2019). Arbitrage could occur at the macro-level (between jurisdictions) or at the micro-level (for example, between competing financial markets and firms that act in differing capacities as “gatekeepers”) (Coendet, 2021). Accordingly, if jurisdictions or micro-level gatekeepers fail to cooperate, the effectiveness of regulatory initiatives can be undermined (Nouy, 2017).

These theories relate to this study’s research question for three reasons. First, the concept of conduct risk is rooted in behavioural economics (Miles, 2017). Second, policymakers and regulators have utilised principles and rules-based approaches to encourage firms to mitigate it. For example, in a high-profile recent enforcement action against *Citigroup Global Markets Limited* (2024c) for failures in algorithmic trading-related systems and controls, the FCA cited breaches of Principles 2 (requirement to act with skill, care and due diligence) and 3 (requirement to put in place adequate systems and controls) as well as Market Conduct Rule 7A.3.2 (a specific requirement for firms engaged in algorithmic trading to put in place appropriate risk mitigation techniques). Third, market participants might be incentivised to engage in regulatory arbitrage at the macro or micro levels if such approaches are perceived as too aggressive or lenient. This is particularly true in algorithmic markets where market participants strive for a competitive edge. (Bodek, 2018).

As this study is primarily concerned with conduct risk, behavioural economics played a leading role in shaping the research design. This is allied with the author’s ontology and

epistemology, referred to in the next chapter. The machines (here: algorithms) are, at least at the time of writing, tools humans deploy to reshape their working environments, relationships, and attitudes towards risk-taking. Therefore, qualitative research methods were preferred because they facilitate the in-depth exploration of human behaviours (Miles, 2014). Although not exclusively, the author also analysed the results through a behavioural lens. This helps to address some of the gaps identified in the conduct-related literature.

The theories of principles-based regulation and regulatory arbitrage played a secondary role in the study. Though all three theories overlap to a certain extent, the level of interconnectedness in this study is threefold. This includes assisting in interpreting results, assessing the potential implications of policy choices at the macro and micro levels, and devising practice recommendations. For example, this study's aim is not to examine the merits of principles versus rules-based approaches per se. However, the contrasting successes and failures of "hard" and "soft" law approaches in changing behaviours are weighed in this study. Similarly, the prospect of regulatory arbitrage as a threat to effective policymaking is considered. This is, in itself, a calculating behaviour.

While developing a new theory is not the objective of this study, this section illustrates that it is firmly anchored in existing financial regulation theories. Furthermore, some of this study's findings empirically support these theories and extend them to relatively understudied populations (investment firms) and contexts.

### **2.6 Conclusion**

As of 2020, AT has received considerable attention from researchers regarding its impact on market quality, market fairness, and, to a lesser extent, institutional culture. Researchers conducted most of these studies in the context of US equity markets. Only a few studies have been performed in the context of FICC markets. Furthermore, whilst a diverse range of conduct risks had been identified by the AT literature, these were not directly referred to as 'conduct risks'. Granted, most of these risks have, to date, arisen out of human action or inaction. Nonetheless, some researchers in machine ethics caution against a temptation to solely hold humans responsible for the conduct of super-intelligent machines that are becoming increasingly unpredictable and self-

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determinative. Therefore, this literature review has suggested topics worthy of future enquiry to help UK FICC market participants future-proof their business models. It also grounds this study within existing theories of financial regulation.

## Chapter 3 Overarching methodology

### 3.1 Overall research aims and objectives

This research project aims to make a significant contribution by informing the policy decisions of regulators and investment firms through:

- (1) offering evidence in support of a re-calibration of regulatory and industry assessments of conduct risk to specifically accommodate markets in which levels of human intervention become ever more limited and, accordingly, holding humans accountable increasingly difficult;
- (2) broadening the AT research agenda to consider conduct risks inherent in the FICC markets. The development of AT in FICC requires attention to help regulators and investment firms trading these asset classes identify the unique evolving risks to which they will be exposed and
- (3) drawing upon experiences in comparable financial regulatory systems to devise practical solutions for the management of conduct risk that could be adopted by regulators and firms alike. The project initially sought inspiration from other highly regulated industries that employ algorithms, such as the health and legal sectors. This idea was abandoned after a discussion with the project's lead supervisor in late 2021. The author had already collected a large amount of interview data. Hence, it was felt that there was a substantial risk of data overload if this route were pursued.

The remainder of this chapter is structured as follows. The research questions, as amended, are outlined in Section 3.2. A critical evaluation of possible research strategies is made in Section 3.3, and an explanation of data collection methods is given in Section 3.4. Section 3.9 sets out strategies for analysing the data collected. The indicative timetable for conducting the research is provided in Section 3.10. Finally, concluding comments and a statement of the author's proposed research strategy are offered in Section 3.11.

### 3.2 Research questions

In consideration of the above, the following ‘overarching’ research question (Patton, 2015) was proposed:

*What are the practical consequences of the transformation of the UK FICC markets into algorithmic realms for the management of conduct risk?*

This question was broken down into the following sub-questions:

- (1) Is employees’ understanding of conduct risk aligned with values in their employers’ public statements?
- (2) How advanced are UK investment firms’ efforts to comply with the MiFID II RTS 6 provisions that govern firms’ algorithmic trading conduct?
- (3) Does the deployment of algorithms combined with direct electronic access increase conduct risk?
- (4) How effective are the enforcement activities of derivatives exchanges in the digital age?

These research questions have several practical implications. First, any evidence of substantial misalignment between (i) employees’ understanding of conduct risk and (ii) that officially articulated by their firms could suggest that regulatory initiatives to tackle it at more granular levels, for example, concerning AT, might be destined to fail. Second, suppose one of the most ambitious granular initiatives is not consistently applied. In that case, they may not be delivering on the promise of lowering AT-related conduct risk, raising questions about their cost benefits. Third, such regulatory initiatives to reduce AT-related conduct risk are currently designed around the importance of the financial intermediary. Yet, this is perhaps no longer sustainable in a trading environment in which end users are increasingly directing. Lastly, suppose a financial intermediary fails to prevent the misuse of algorithms and other poor conduct by its employees and clients. In that case, the last line of defence is often a trading venue. Effective enforcement could act as a significant deterrent to misbehaviour. This is because the commercial power of derivatives exchanges in the US and UK is such that being excluded or ostracised from



trading could be highly damaging to a participant. Conversely, ineffectual enforcement could attract unscrupulous players and, by extension, skew competition between venues.

### 3.3 Critical evaluation of research strategies

#### 3.3.1 Philosophical assumptions

##### 3.3.1.1 Ontology (“What is there?” (Robinson, 2004))

Ladyman (2002) asserts that all scientists investigate a topic through their lens, equipped with their presumptions. Similarly, Baert (2005) implores researchers to reflect on their cultural influences and be transparent before commencing an inquiry.

The author’s ontology is shaped by what Allitt (2009) defines as the “*conservative tradition*”. According to Allitt, this is characterised by:

- a) a scepticism about radical change, “new society” ideas and the ability to change *human* behaviour; and
- b) an assumption that the most fundamental questions about *human* society have already been addressed. As Harari elucidates:

*“For thousands of years of history was full of technological, economic, social and political upheavals. Yet one thing remained constant: humanity itself. Our tools and institutions are very different from those of biblical times, but the deep structures of the human mind remain the same”.*

#### **HARARI (2015)**

At first glance, approaching the study of the impact of disruptive technology on the financial markets through a conservative lens may appear paradoxical. However, the author assumes that deploying algorithmic technologies in the FICC markets represents a natural, gradual evolution that can be controlled instead of a sudden and chaotic revolution. Nevertheless, the author acknowledges Harari’s assertions in *Homo Deus* that the current pace of technological disruption is such that one is often unable to

comprehend what society will look like even in the relatively near future, for example, in the next twenty years.

### 3.3.1.2 Epistemology (“How do I know?” (Robinson, 2004))

*“...truth is a poor test for knowledge. The real test is utility.”*

**(HARARI, 2011)**

The author’s ontology informs the employment of a pragmatic epistemology. Pragmatic conservatism favours a flexible and gradual approach to reform (Lacey, 2016). Unsurprisingly, this is reflected in the pragmatic research methodology advocated by Baert (2005):

- a) the primary research objective is the production of findings that are useful to policymakers (e.g. the FCA) and other interested parties (e.g. regulated investment firms); and
- b) the research approach is practical and not rigid. This permits the researcher to react quickly to rapidly changing situations, which is critical when studying the impact of new technology.

The author believes this approach is consistent with the outcomes-based approach taken by the FCA since 2013, summarised by then Chief Executive Martin Wheatley:

*“I want the FCA to use its new powers and remit to bring a more human face to financial services regulation. A more pragmatic, sophisticated approach to regulation.”*

**(WHEATLEY, 2013)**

This “human face” led the author to make the first pragmatic research decision: using qualitative instead of quantitative strategies. This was in recognition that, whilst human intervention may be increasingly limited in specific markets, one cannot (yet) converse with a trading algorithm. As seen in the preceding chapter, quantitative strategies are

currently more suited to studies concerning the impact of algorithmic trading on market quality and fairness, typically examined in numerical terms, e.g. price effects. By contrast, conduct risk is a concept that has hitherto been guided by human, as opposed to binary, interpretation, and therefore requires a practical approach to investigation and management (Ross, 2019).

### 3.4 Possible strategies

The author identified three possible strategies outlined in *Qualitative Research and Evaluation Methods* (Patton, 2015) that appeared most appropriate for conducting qualitative research through a pragmatic lens. This section considers the advantages and disadvantages of using each strategy in the context of the author's research topic.

#### 3.4.1 Option one: case studies

*“The case study approach to empirical research investigates a particular real-life phenomenon within specific contexts.”*

**(SAGE RESEARCH METHODS, 2017D)**

The advantages of using a case study strategy include:

- a) an opportunity to attain a high level of focus, e.g. in Lenglet and Mol (2016) research focused solely on the activities of *Shibboleth Securities* for three years, examining how the firm had navigated EU regulations applicable to algorithmic trading and
- b) the possible production of generalisable findings (Miles, 2014), e.g. in Ma and McGroarty (2017) examine automated trading as a case study of ‘Social Machines’ in the financial markets, concluding that high-speed information consumption has transformed markets with positive and negative implications.

The disadvantages of using this strategy include:

- a) obtaining access (Myers, 2020). This has proved to be especially problematic in past studies that have examined the culture of high-frequency trading firms, e.g. MacKenzie (2018b) and Lange (2016); and
- b) it produces a large amount of data, which is very challenging to analyse for a lone researcher (Kitchin, 2017).

A few papers reviewed in the systematic literature review feature case study strategies. Consequently, researchers can make additional contributions regarding using this strategy in this field.

### 3.4.2 Option two: mixed methods

*“This particular term usually refers to mixing that crosses the quantitative-qualitative boundary.”*

#### **(SAGE RESEARCH METHODS, UNDATED-AC)**

Often associated with a pragmatist epistemology (Patton, 2015), mixed methods strategies confer researchers the following advantages:

- a) excellent opportunities to triangulate, reinforcing any findings (Mertens and Hesse-Biber, 2012) and helping to mitigate bias (Curry et al., 2009); and
- b) solid possibilities for generalisation (Gibson, 2017).

However, despite these advantages, mixed method strategies pose challenges for the lone researcher. Myers (2020) opines that they result in large sample sizes, which would be time-consuming to process without a research team. This is perhaps why mixed methods designs were not prominent in the algorithmic trading literature reviewed by the author (Culley, 2020a).

### 3.4.3 Option three: action research

*“A type of applied research designed to find the most effective way to bring about a desired social change or to solve a practical problem, usually in collaboration with those being researched”*

**(SAGE RESEARCH METHODS, UNDATED-B)**

Action research involves the participation of the subjects of a research project. For example, in the case of this thesis, this might affect the employees of a financial services firm or those tasked with regulating their behaviour. However, these participants are more than passive research subjects. Instead, they work with the researcher to take action to solve a mutually identified problem. This usually involves iterative phases of knowledge generation based on strategising, enacting and appraising outcomes. After that, the researcher(s) and practitioner(s) use the results to fine-tune solution(s) until they become effective.

This strong emphasis on identifying practical solutions to real problems makes action research particularly attractive to a pragmatic epistemology researcher. This is because the utility of the researcher's recommendations can be directly observed in organisational change, as opposed to merely being theoretical contributions in a journal article (Myers, 2020).

Despite this significant advantage, action research was not featured in articles considered part of the systematic literature review. This is probably because it is reportedly a high-risk strategy as:

- a) it is very time-consuming (Karim, 2001), a significant challenge for a lone researcher such as the author;
- b) it is generally more suitable to a single entity, and finding an entity that is willing to be the subject can be difficult (Myers, 2020); and
- c) some journals allegedly will not accept papers that use it owing to concerns regarding researcher neutrality (Myers, 2020).

### **3.5 Most suitable strategy**

Taken together, the author selected what Patton (2015) terms ‘instrumental use multiple case sampling’ as the most suitable strategy to seek answers to the proposed research questions. This entails purposive case selection (Eisenhardt, 1989) The units of study comprise firms using various algorithmic and high-frequency trading techniques active in the UK FICC markets. The author intended to work with a sample size between four and ten firms, providing flexibility to respond to new themes or saturation as the research progresses. The author considered this approach would create solid possibilities for cross-case comparison and insightful policy recommendations.

Ultimately, the author would speak to a range of participants from nine firms (see Chapter Four) as well as regulators and a range of independent third-party experts, further background to whom is provided, on an anonymised basis, in each Chapter (where their experience is relevant to a Chapter’s subject matter). “Pure” high-frequency trading firms proved almost impossible to penetrate. Still, it was felt that enough data had been derived from participants at other firms to draw meaningful conclusions to help answer each of the revised research questions earlier in this Chapter.

### **3.6. Explanation of data collection**

The research conducted for this thesis was qualitative. Therefore, it was not “data-driven,” i.e., based on an evaluation of numerical data, as is typical of quantitative research. Nonetheless, a range of qualitative data was collected and analysed. This section explains the data collected.

#### **3.6.1 Types of data collected**

##### **3.6.1.1 Primary data: Interviews**

Taking what Patton (2015) calls a ‘pragmatic interview approach’, the author intended to conduct ‘elite interviews’ (Harvey, 2011). The primary justification for this approach was

that algorithms are ‘black-boxed’ at the time of writing, meaning that a researcher seeking a deeper understanding of their purpose or functionality is practically limited to conducting interviews with their creators or users (Kitchin, 2017). Today, one cannot interview the machine (MacKenzie, 2018a).

The primary constraints associated with this approach are gaining access (per option one in section 3.3.2, above), lack of cooperation (Roulston, 2014), effectively managing both the researcher’s and interviewees’ finite time and, similarly, placing constrictions (‘macro’ level, i.e., more achievable if in one jurisdiction, here, the UK, and ‘micro’ level, i.e., conducting in person may be more challenging than performing remotely).

The specifics of the interview design are set out in **Table 3.1** below.

**Table 3.1** *Interview Design Overview*

	<b>Approach</b>	<b>Justification(s)</b>
<b>Who?</b>	Chief executive officers, compliance officers, software developers, and traders in UK firms employing algorithmic trading techniques.	Obtain a broad range of accounts from management, ‘front’ office, and control functions. In keeping with the precedent set by previous studies of algorithmic trading culture, e.g. MacKenzie (2019), Currie and Seddon (2017a) and Borch et al. (Borch et al., 2015).
<b>Sampling approach</b>	Purposive. 30-50 range in multiple organisations, approximately 3-5 per case. This adopts the recommendation by Saunders and Townsend (2016).	Pragmatic flexibility is needed to expand the investigation when new leads are uncovered in an interview, but it should stop once saturation is reached. Per Creswell, cited in Saunders and Townsend (2016), not merely seeking a ‘round number’. Out of 22 articles reviewed, almost a quarter were within this range, see <b>Table 3.2</b> .
<b>Where?</b>	Face-to-face at interviewees’ offices preferred, telephone, or online (e.g. by Microsoft Teams).	It is easier to build rapport in person, but telephone interviews maintain flexibility in recognising elites’ busy schedules, as Harvey (2011) suggests (mitigate time constraints).

	<b>Approach</b>	<b>Justification(s)</b>
<b>How long?</b>	45 minutes – 1 hour in single sessions if possible. Not longitudinal, but we may have to schedule follow-up sessions in some instances.	Harvey (2011) recommended the ideal length of time to collect rich data from elites. Guards against fatigue and respects busy schedules ( <b>mitigates time and place constraints</b> ).
<b>Interview type</b>	Semi-structured with open questions.	There is some structure to ensure consistency across interviews, but there is also openness to new ideas without leading (Myers, 2020). Many interviews about AT research have been unstructured; see <b>Table 3.2</b> . These authors use this technique because it is reportedly favoured in ethnographic research for its ability to generate many leads (Sanchez, 2014). Still, this approach is unsuitable here because it is too time-intensive (McLeod, 2014) for a lone researcher working on a part-time basis like the present author.
<b>Recording</b>	Recorded interviews, if possible, were professionally transcribed, but participants were anonymous.	The recording faithfully reflects the interview conducted, including lengthy pauses and ‘fillers’, as opposed to merely being the author’s account. Professional transcription will be expensive but will save the author time ( <b>mitigate time constraints</b> ) while maintaining anonymity will encourage ‘full and frank’ accounts in otherwise secretive businesses ( <b>mitigate access constraints</b> ).



**Table 3.2** Overview of interview approach taken in other papers (as of 6th December 2020)

Author(s)	No. of organisations	No. of interviewees	Interview type
Arnoldi (2016)	Undisclosed	3	Unstructured
Beverungen and Lange (2018)	1	21	Undisclosed
Borch (2016)	Undisclosed	30	Undisclosed
Borch and Lange (2017a)	Undisclosed	62	Semi-structured, open-ended
Borch et al. (2015)	Undisclosed	62	Undisclosed
Clark and Ranjan (2012)	Undisclosed	30+	Undisclosed
Clark et al. (2011)	Undisclosed	30+	Undisclosed
Coombs (2016)	Undisclosed	15	Undisclosed method individual interviews and focus group
Cooper et al. (2017)	19	28	Unstructured
Currie and Seddon (2017b)	Undisclosed	23	Undisclosed
Currie and Seddon (2017a)	Undisclosed	23	Unstructured
Kauffman et al. (2015)	Undisclosed	Undisclosed	Undisclosed
Lange (2016)	5	82	Undisclosed
Lenglet and Mol (2016)	1	Undisclosed	Structured and unstructured
MacKenzie (2015)	Undisclosed	33	Undisclosed
MacKenzie (2017)	Undisclosed	65	Undisclosed
MacKenzie (2018a)	Undisclosed	72	Undisclosed
MacKenzie (2018b)	Undisclosed	194	Unstructured
MacKenzie (2019)	Undisclosed	338	Undisclosed
MacKenzie et al. (2012)	Undisclosed	19	Unstructured
Seyfert (2016)	25	50	Semi-structured
Zook and Grote (2017)	Undisclosed	Undisclosed	Undisclosed

An outline protocol for one-to-one interviews can be found in **Table 3.3**.

**Table 3.3** *One-to-one interview protocol*

PART A	BACKGROUND	<ul style="list-style-type: none"> <li>• Investment firm sector/sub-sector</li> <li>• Investment firm's goals</li> <li>• Types of algorithms deployed</li> <li>• Types of strategies employed</li> <li>• Any machine learning / artificial intelligence algorithms?</li> <li>• Design, deployment, (re) calibration process</li> <li>• Understanding of conduct risk, firm's internal framework</li> </ul>
PART B	EMERGING CONDUCT RISKS AND THEIR IMPLICATIONS FOR HUMAN ACCOUNTABILITY	<ul style="list-style-type: none"> <li>• Firm's perception of conduct risks associated with algorithmic trading in sector/sub-sector, current and future</li> <li>• Likely levels of self-calibration: near, medium and long-term</li> <li>• Knowledge/levels of understanding of algorithms and conduct risk: senior management, front office, support staff. Are they improving or declining?</li> <li>• How do humans in a firm stay abreast of algorithmic developments and behaviour?</li> <li>• Description of conduct risk incidents involving algorithms – past three years</li> <li>• Do you plan to reduce overhead because of increased trading automation? Which areas?</li> </ul>

PART C	MACHINE-TO-MACHINE REGULATION	<ul style="list-style-type: none"> <li>• Approach to machine conduct mitigation</li> <li>• Preventative: any embedded ethical / conduct standards?</li> <li>• Detective: Surveillance tools currently used?</li> <li>• Ability of humans to spot conduct events caused by algorithmic activity</li> <li>• Ability of regulators and markets to identify issues</li> <li>• Horizon developments, ‘build, partner, buy’</li> <li>• Incentivising machines</li> <li>• Deterring machines</li> <li>• Punishing machines</li> </ul>
PART D	INITIATIVES TO MITIGATE CONDUCT RISKS AND LESSONS LEARNED	<ul style="list-style-type: none"> <li>• Industry / sector-wide initiatives, collaboration levels</li> <li>• Involvement/reliance on third-party vendors</li> <li>• Merits of legislative versus industry-lead solutions</li> <li>• Likely effectiveness of the UK’s approach versus approaches of competitor jurisdictions, e.g. US, EU/EEA</li> <li>• Lessons learned: <ul style="list-style-type: none"> <li>○ incidents within the trading industry</li> <li>○ incidents extraneous to the trading industry</li> </ul> </li> <li>• Principle concerns for the future</li> </ul>

### 3.6.1.3 Secondary data

The author intended to collect a range of supplementary secondary source data, including:

- regulations;
- regulatory notices such as enforcement actions;
- public reports; and
- publicly available information about firms employing algorithmic trading techniques.

The justification for seeking this data is to provide context and answer the fourth sub-question.

At certain stages of the research journey, the author also:

- considered collecting data on anonymous employer review websites such as Glassdoor and Indeed; and
- submitted a Freedom of Information (“FOI”) request to the FCA to seek more granular data on sell-side firms’ suspicious transaction and order reporting (“STOR”).

In the end, both above attempts were abandoned.

First, the University of Southampton Ethics Committee required significant amendments to the proposal to use Glassdoor and Indeed data to alleviate data protection concerns. The author decided that the scale of the amendments necessary constituted a time cost that could not be justified by the likely benefit (yield in insights) to be gained. Thus, the author aborted the request to amend the scope of the ethics approval that had previously been received.

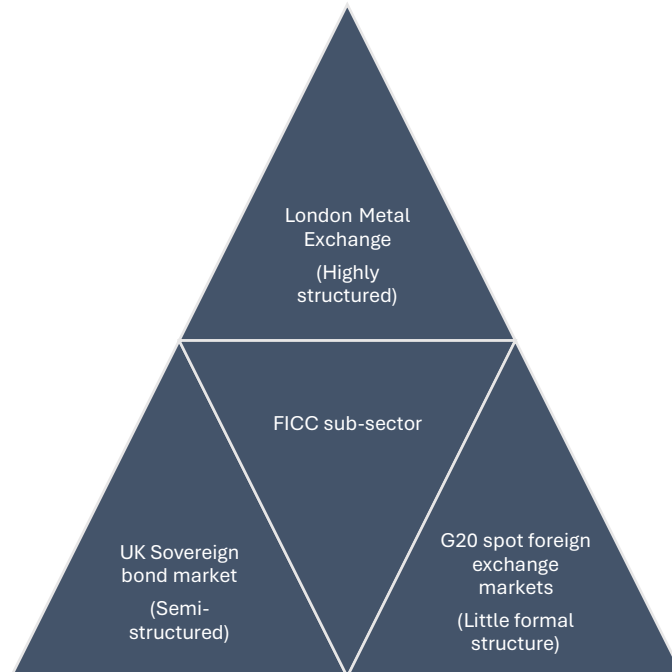
Second, the FCA declined to provide the information requested using the FOI mechanism in case this accidentally undermined the commercial interests of the sell-side firms that had (and had not) submitted STORs. On this occasion, the University of Southampton Ethics Committee approved the plan to submit the FOI request. Even so, once rejected, the author had little choice but to accept the outcome.

As the author did not intend to collect any data that is not publicly available, few significant constraints were foreseen other than potential overload.

### **3.6.1.4 Sub-sector triangulation**

The author initially sought to use sub-sector triangulation to select the interview participants. This was two-fold: (i) examine if some findings could be generalised across diverse FICC markets and (ii) reduce the propensity for inward bias if only one sub-sector was studied. The markets illustrated in **Figure 3.1** below were selected because (i) they offer a balance between high, semi and lightly structured markets; and (ii), from a practical perspective, the author had(has) a lot of contacts in these sub-sectors from which to recruit participants for the study.

**Figure 3.1** *FICC sub-sectors*



An overview of the contemporary structures of these sub-sectors was obtained from Seddon (2020), Mackenzie (2020) and Marcus and Kellerman (2018) as outlined in section 2.3 above. Three recent articles provided insight into how automated trading is (or is not) disrupting traditional trading methods in these markets. These were used to inform the triangulation design and resultant selection of interview participants, as set out in **Table 3.**

**Table 3.4** Sector Triangulation Overview

	<b>LME forwards (Seddon, 2020)</b>	<b>Sovereign bonds (MacKenzie et al., 2020, Petley, 2019)</b>	<b>Spot foreign exchange (Marcus and Kellerman, 2018)</b>
<b>Market structure</b>	<ul style="list-style-type: none"> <li>• Recognised investment exchange (“RIE”) authorised by the FCA</li> <li>• Category of exchange membership dictates trading privileges</li> <li>• Large physical delivery infrastructure, e.g. a network of warehouses</li> <li>• Three sub-venues: open outcry ring, interoffice market and LME Select, an electronic venue</li> <li>• Category 1 and 2 members act in a ‘dual capacity’, i.e. act for their own account and serve clients simultaneously</li> <li>• A significant over-the-counter (“OTC”) ‘shadow market’, mainly because of the LME’s fees</li> </ul>	<ul style="list-style-type: none"> <li>• Division into primary and secondary markets</li> <li>• Primary markets where initial debt issuance takes place, overseen by UK Debt Management Office (“DMO”)</li> <li>• A small number of large investment banks, known as ‘Gilt-Edged Market Makers’ (“GEMMS”) act as primary dealers in the primary market and have special privileges but are obliged to participate in debt auctions</li> <li>• The secondary market is where transactions in debt instruments that have already been issued take place. This market is overseen by the London Stock Exchange (“LSE”)</li> </ul>	<ul style="list-style-type: none"> <li>• Highly fragmented, cross-border market with most trading taking place on an OTC basis instead of on an RIE</li> <li>• Lightly regulated unless continually rolled, in which case become derivatives like contracts for differences</li> <li>• Attempt at self-regulation through the FX Global Code, which the FCA has recognised</li> <li>• Large banks dominate the market and have a significant informational advantage</li> </ul>

	<b>LME forwards (Seddon, 2020)</b>	<b>Sovereign bonds (MacKenzie et al., 2020, Petley, 2019)</b>	<b>Spot foreign exchange (Marcus and Kellerman, 2018)</b>
		<ul style="list-style-type: none"> <li>• In the secondary market, a small number of inter-dealer brokers (“IDBs”) have exclusive rights to arrange transactions between GEMMs</li> <li>• Broker-dealers can act in a ‘dual capacity’ and facilitate trading by the broader investment community</li> </ul>	
<b>Market users</b>	<ul style="list-style-type: none"> <li>• Traditionally, producers and other physical players</li> <li>• Banks and investment firms have driven increasing ‘financialisation’ since the 1990s</li> <li>• June 2017: Jump Trading LLC becomes the first HFT firm to become a Category 3 member of the LME</li> </ul>	<ul style="list-style-type: none"> <li>• UK Government</li> <li>• Underwriters (GEMMs)</li> <li>• Institutional investors</li> <li>• Retail investors</li> </ul>	<ul style="list-style-type: none"> <li>• Investment banks</li> <li>• An extensive range of investment firms, from price aggregators to HFT firms</li> <li>• Entities speculating on a proprietary basis</li> <li>• Non-financial entities seeking to hedge currency exposures or exchange currencies</li> <li>• Retail speculators</li> </ul>
<b>Level of electronic market access</b>	<ul style="list-style-type: none"> <li>• February 2001: LME Select</li> </ul>	<ul style="list-style-type: none"> <li>• Limited appetite for</li> </ul>	<ul style="list-style-type: none"> <li>• Electronic trading</li> </ul>



	<b>LME forwards (Seddon, 2020)</b>	<b>Sovereign bonds (MacKenzie et al., 2020, Petley, 2019)</b>	<b>Spot foreign exchange (Marcus and Kellerman, 2018)</b>
	<p>platform introduced</p> <ul style="list-style-type: none"> <li>• Since 2005: Select API introduced, accelerating disintermediation</li> <li>• Newer versions of LME Select have added additional functionality that is attractive to algorithmic traders</li> </ul>	<p>disintermediation, so no HFT/AT firm has managed to gain direct electronic access to the IDB market</p> <ul style="list-style-type: none"> <li>• IDB screens can only be accessed by GEMMs</li> </ul>	<p>predominates through a wide range of platforms</p> <ul style="list-style-type: none"> <li>• Minimal voice trading in liquid currency pairs, e.g. G20</li> <li>• Limited amounts of general market data owing to the OTC nature of trading</li> </ul>
<b>Liquidity</b>	<ul style="list-style-type: none"> <li>• Three-month forwards not deemed liquid enough by ‘financial’ players but offer bespoke hedging opportunities for physical participants</li> <li>• LME minis were introduced to offer a standardised, futures-style alternative with monthly prompt dates for speculative community</li> </ul>	<ul style="list-style-type: none"> <li>• GEMMs undertake to ensure liquidity in secondary markets</li> </ul>	<ul style="list-style-type: none"> <li>• Extremely high, continuous market that is open 24 hours a day, 5.5 days per week</li> <li>• Second largest market in the world by traded volume, with \$1.7tn average volume</li> <li>• Occasional ‘liquidity mirages’ as high-speed markets with quotes becoming ‘stale’ very quickly</li> </ul>
<b>Target interview participants</b>	<ol style="list-style-type: none"> <li>1. Ring dealing (Category 1) member: as lowest incentive to change</li> </ol>	<ol style="list-style-type: none"> <li>1. GEMM: the biggest beneficiary of the current market structure, with</li> </ol>	<ol style="list-style-type: none"> <li>2. Investment bank: as the dominant incumbent in the existing</li> </ol>

	<b>LME forwards (Seddon, 2020)</b>	<b>Sovereign bonds (MacKenzie et al., 2020, Petley, 2019)</b>	<b>Spot foreign exchange (Marcus and Kellerman, 2018)</b>
	<p>market structure</p> <p>2. Category 2 member: as this membership category has driven 'financialisation'</p> <p>3. Physical user of the market: keen to retain the bespoke character of the existing 3-month forward market</p> <p>4. Category 3 member or quantitative hedge fund: a significant interest in making LME forwards resemble traditional futures</p>	<p>little incentive to change it</p> <p>2. IDB: as one of the last sub-sectors where voice broking still plays a significant role</p> <p>1. Wealth manager: as sovereign bonds often form a 'low-risk' investment in portfolios, fund managers must work within existing market structures to obtain the best results for clients</p>	<p>market structure</p> <p>3. Non-bank liquidity provider: as a primary challenger to incumbent investment banks, pressure to innovate to offer clients new functionality</p> <p>4. Retail forex provider: as firms continually seek to add new trading tools to compete for clients that have the most limited access to up-to-date trading information (in contrast to the investment banks)</p>

Despite the author's best efforts, recruiting participants from firms active in the sovereign bond markets proved very difficult. This was not a significant surprise because, of the three sectors identified, the author had (and still has) the fewest connections in the sovereign bond markets. The author attempted to bridge this gap by seeking help from contacts with many direct connections in this sector. Ultimately, this was to no avail, though. This was another factor which motivated the selection of the topic for the fourth chapter of this thesis: exchanges are not investment firms, and in the case of ICE Futures

Europe and the U.S., they offer a very diverse product range. These features, therefore, offer a triangulation of sorts.

The author does not believe the inability to recruit participants in the sovereign bond markets significantly impacted the results. This is because there are enough similarities between the electronic trading of sovereign bonds and other FICC market products to make most of the results of this study generalisable. This includes the dominance of large professional counterparties and reliance on market makers (2014e), relatively low levels of fragmentation (at least in the trading of commodity products, if not currencies)(Cheng and Xiong, 2014, 2022n), existence within the same primary regulatory framework in the UK (namely, MiFID II) (Oprea, 2017) and G20 currencies and sovereign bonds are both highly liquid (2022n, Kumar, 2014).

### **3.7 Potential ethical issues and their mitigation**

Using insights from Kara (2018), the author identified the following potential ethical issues that could have arisen when conducting the research:

- (1) failure to protect confidential data, e.g. interviewees disclose sensitive information, and their identity is accidentally revealed to a third party;
- (2) lack of reciprocity: the researcher benefits from the time and insight of the researched but offers nothing in return; and
- (3) decline in researcher well-being: The author conducted the research part-time, balancing this with work and family commitments, which risked researcher burnout.

The author intended to take the following steps to address these risks:

- (1) to protect confidentiality: offer of non-disclosure agreements, informed consent regarding collection and recording of data with the opportunity for participants to withdraw consent at any time, and anonymisation of interview data (all of these steps are recommended by Boynton, 2005). Information and consent letter templates that are based on the recommendations of Boynton (2005) and the University of Southampton can be found in Appendices One and Two, respectively;

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(2) to ensure reciprocity: sharing results with interviewees, e.g. providing copies of research articles; and

(3) to prevent 'burnout': scheduled 'time out' slots, e.g., spending time with family or taking a holiday.

The author was self-funded, so a conflict of interest could not develop because of an association with a third-party sponsor.

It should be stated that the author was previously employed by commercial entities active in trading. Furthermore, the author has established a compliance consultancy that provides services to entities in the financial sector, including investment firms. The author does not believe these facts unduly influenced this thesis's findings, mainly because he took steps to identify conflicting points of view. In the end, this is for the reader to judge.

The University of Southampton's Ethics Committee received approval to commence data collection on 6<sup>th</sup> February 2021. In addition, the following amendments subsequently received approval:

- 8<sup>th</sup> March 2021: to recruit potential interview participants using the author's connections on LinkedIn.
- 25<sup>th</sup> March 2021: to make minor amendments to the study's scope; and
- 4<sup>th</sup> November 2021: to submit the FOIs to the FCA as described in the previous section.

The Ethics Committee's approval was conditional upon all interview participants being granted anonymity. This ensured that participants were protected from retaliation or other possible adverse repercussions. Similarly, all interviewees were asked to give their prior express consent to the recording and transcription of the interviews.

This was not enough to reassure everyone, however. Notwithstanding this, the author managed to gain the trust of a sufficient number of practitioners so that this obstacle did not seriously limit the study's findings.

Owing to the COVID-19 outbreak and associated public health measures, all interviews were held remotely, primarily using Microsoft Teams.

### **3.8 Relevant quality criteria to ensure the validity of the research**

The author considered the quality criteria proposed by Patton (2015) for the validation of pragmatic studies to be the most relevant to assessing the intended research. To summarise, this entails determining whether the study:

- a) aids decision-making through useful findings and lessons learned;
- b) identifies a target audience/beneficiaries;
- c) actively involves the target audience, demonstrating usefulness;
- d) is practical and grounded in ‘real-world’ affairs, ensuring credibility to the target audience; and
- e) provides timely release of results to aid contemporaneous use.

These criteria reflect that “knowledge is socially constructed” (Symon et al., 2018) in qualitative studies. Whilst the author retained a complete audit trail of his research, its validity should not merely be judged based on slavish adherence to procedure. This is consistent with the outcomes-focused approach to conducted regulation, which the FCA advocates (Bailey, 2019).

### **3.9 Strategies for data analysis**

The author used the strategies in this section to analyse the data collected.

The author used coding to analyse the data collected.

All interviews were transcribed and analysed using qualitative content analysis tools in Nvivo. After Nvivo produced the initial transcriptions, the author used a file naming

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convention to catalogue the transcripts (as recommended by Denscombe (2017)). To preserve anonymity, this was based on an interviewee's job title and interview date. Where different interviewees shared the same job title, a number was allocated to make it easier for the author to distinguish between the transcripts.

Before coding, the author read through the transcripts and made handwritten notes. This informal annotation helped to identify potential themes of interest. Whilst the quality of Nvivo's output was generally good, there were many instances where the system had not adequately transcribed a word because of an interviewee's accent, brief instances of poor sound quality or the misinterpretation of a technical term with which it was unfamiliar. Additionally, the spoken word is notoriously imprecise. People do not always finish their sentences and often mispronounce words (Denscombe, 2017). The author had to import the transcripts into Microsoft Word and use the "read aloud" function to detect these issues. This was a very time-consuming process. The author occasionally had to playback certain sections of the interviews to identify an unfinished word or word Nvivo had mistranslated. Consequently, minor amendments were made to the transcripts to ensure intelligibility. Once complete, the time allocated by Nvivo to each sentence or paragraph also served as a line number for ease of reference.

The interview transcripts contained a lot of data. Following recommendations in Miles (2014) and the steps outlined by Denscombe (2017) to ensure reliable content analysis, the author intended to use these transcripts to build a 'codebook' comprised of first- and second-cycle codes. During the first cycle, the author attempted to detect items of significance and patterns across the interviews. This phase was deliberately overinclusive, following the recommendation of Denzin et al. (2024). The author built upon the first-cycle codes in the second cycle to identify fewer, richer findings. At this stage, the author sought to make extrapolations regarding causes, themes, and relationships so valuable lessons could be learned from the primary data. Keywords or phrases were developed and assigned to excerpts from the texts using Nvivo's colour-coding functionality. This enabled the author to record the frequency at which statements were made. Furthermore, it offered an audit trail, which the author could use to retrace his steps when writing up (Flick, 2023).

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The author also used coding to analyse enforcement notices. This process is described in detail in Chapter 7 and shares many similarities to that used to code the interviews. In certain respects, the enforcement notices were easier to code because they were already a written medium. A critical difference between the coding of the interviews and the enforcement notices was the author's lens. The lens through which the interviews were coded and analysed was more inductive leaning, whereas the latter drew upon a tool which is the direct product of behavioural science theories. In short, inductive reasoning seeks to draw inferences from observation (Undated-q). This is contrasted with deduction, which makes inferences based on presuppositions such as those found in theories (Denzin et al., 2024). The use of inductive reasoning is more commonly associated with a pragmatic epistemology. That said, the author's decision to take a more deductive approach to coding and analysing the enforcement notices was pragmatic. This is because the enforcement notices contain varying levels of detail. Therefore, the author employed a behavioural lens to help order this detail into thematic clusters for interpretation in a real-world context.

Denscombe (2017) asserts that the main challenge to the robustness of qualitative data analysis is the intimate involvement of the researcher in data collection. This makes it very unlikely that a future researcher could identically replicate the findings of a qualitative study. After all, an interview is partially the product of a researcher's personality and the context in which it was conducted (Denscombe, 2017). Moreover, some believe this increases the risk of bias in research design and the interpretation of results. To address these issues, the author:

- sought contrarian evidence and explanations during the data analysis stage. Miles (2014) argues that these not only aid understanding but help to counteract researcher bias;
- sought to triangulate where practicable, as described earlier in this chapter;
- has provided biographical details in Chapter 1 to help the reader assess his perspective; and
- does not make any claim that the findings are absolute. The author acknowledges that a future researcher may uncover different results or reach different conclusions even if retracing the steps described in this chapter. This is owing to

each researcher's unique perspective and judgement. Besides, so much data is collected in qualitative research it would be impossible for a researcher to use all of it in his report and

- where possible, use verbatim quotes from the interviews or texts analysed.

Qualitative data analysis is not an exact science; coding is an incremental process without a definitive end point. Notwithstanding, the author believes that the methods described in this thesis are transparent and repeatable, even if identical results cannot be guaranteed.

### **3.10 Indicative timetable**

Appendix Three provides an indicative timetable for undertaking the empirical work. Based on the risk assessment provided in Appendix Four, the author believed that no serious risks were posed to meeting the objectives set in the timetable.

### **3.11 Conclusion and statement of strategy that was adopted**

The author believed that the adoption of a pragmatic research framework to identify (i) conduct risks in the FICC markets and (ii) potential solutions to mitigate them was (and still is) consistent with the approach favoured by the FCA to regulate these markets in the UK. Applying this framework as a multiple-case sampling strategy that drew upon data from elite interviews and supporting secondary sources should have contributed practical lessons to firms using AT techniques and their regulators. The author hoped to make these findings available to practitioners through publication in relevant peer-reviewed journals. Initially a testament to the success of the strategy that was originally adopted (as amended), the author would achieve publication in peer-reviewed journals for most of the work that follows.



## **Chapter 4 Is employees' understanding of conduct risk aligned with values in their employers' public statements?**

### **4.1 Introduction**

On the 1<sup>st</sup> of April 2013, the UK Financial Conduct Authority (“FCA”) was established. The creation of the FCA was widely taken to herald the advent of “conduct regulation” in the UK. This did not result in extensive changes to the rulebook containing the core obligations applicable to the conduct of business by UK financial services firms. Instead, the regulator’s *approach* to supervising firms and their representatives was mooted to have changed. The curtain was drawn over the so-called “light touch” oversight that accommodated the rapid growth of the UK financial sector during the Blair-Brown years. Instead, the FCA would “shoot first and ask questions later” (2015a).

Central to the new approach was an emphasis on identifying and mitigating “conduct risk”. Regulators started to use the term in speeches, communications with firms and enforcement cases. Nonetheless, an early observer remarked: “Nobody quite agrees on what conduct risk means or where its boundaries are set” (Ramtri, 2015). Thus, the FCA embarked on a dedicated programme to gauge awareness of conduct risk. Launched as the *5 Conduct Questions Programme*, initial iterations focused on the understanding of staff at wholesale banks. In 2017, the FCA broadened the scope of the programme to other sectors of the wholesale financial markets (2017a). After the most recent round of interactions held in 2019-20, the FCA held that “skills to identify these [conduct risks] must improve” (2020l). However, the fact that employees of financial services firms may present a different “face” in interactions with their regulator is trite. Reasons advanced for this include a desire for employees to present themselves or their firms in a positive light (Culley, 2022). Alternatively, employees seek to minimise the possibility of adverse outcomes.

This chapter aims to investigate how far, if at all, employees’ understanding of conduct risk is aligned with their firms’ public statements of values. These statements are important because they are a window into corporate aspirations and desired behaviours

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(Ehrenhard and Fiorito, 2018). Seventeen employees from nine firms engaged in brokerage and trading activities participated in semi-structured interviews during 2021. These were supplemented by three interviews with third-party consultants who regularly assist brokerage and trading firms with conduct-related matters. Accordingly, 20 interviews were conducted in total. The findings from the interviews were compared to public statements made by the firms. The chapter finds a correlation between firms' value statements and employees' understanding of conduct risk. Be that as it may, some key messages from recent conduct-related initiatives taken by the FCA do not appear to be gaining much traction in the brokerage and trading sector. The chapter suggests the regulator could pilot enlisting former subjects of disciplinary actions to articulate its messages. Drawing upon experiences and frames of reference that employees of brokerage and trading firms could relate to, this approach could be very effective in helping to drive cultural change.

The remainder of this chapter is structured as follows. First, a literature review charts the development of conduct risk since the 2007-8 financial crisis. The challenges academics, firms, and regulators face in defining conduct risk and measuring the success of initiatives intended to improve understanding are weighed. Second, details about the methodology used to conduct the research are provided. Third, the findings of the study are presented. Fourth, a penultimate section discusses the implications of the chapter's findings for practice. Finally, the chapter ends with a short conclusion.

### **4.2 Chapter specific literature review**

The term "conduct risk" emerged in the aftermath of the 2007-8 financial crisis (Miles, 2012). The former UK Financial Services Authority ("FSA") is often credited with inventing the term. However, neither the FSA nor its successor regulator, the FCA, has been willing to define it (De Pascalis, 2019). Instead, the UK regulator has been keen for firms to devise their definitions to account for idiosyncrasies in their specific business models (Ramtri, 2015, Stears and McCormick, 2015). The FCA has, though, informally classified "...issues around...gender...racism, physical bullying and homophobia" as "non-financial misconduct"(Woolard, 2018).

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Academics and practitioners have attempted to advance definitions of conduct risk without official codification (Nicolas and May, 2017). These are commonly framed in identifying and mitigating behavioural outcomes that harm clients (Stubbs, 2021). Some granular taxonomies distinguish between retail, wholesale, personnel and third-party conduct risk and their potential reputational costs (Hargarter and Vuuren, 2019, Daly and O Sullivan, 2020, Daly and Butler, 2018). Many concur that the management of conduct risk is interested in developing sound business practices rather than slavish adherence to laws and regulations (Miles, 2017, Lynch, 2018). After all, “backward-looking” laws (Miles, 2017), can be “gamed” (Filabi, 2018, Zimbler, 2018) and often result in unintended consequences (Black, 2018).

Some describe Conduct risk as a “nebulous” concept owing to its limited jurisprudential foundations. This is something that can cause anxiety, lead to inconsistencies and cause financial and non-financial costs to increase (Ramtri, 2015, Ross, 2019). Accordingly, behavioural scientists encourage firms to look beyond the traditional “compliance domain” to frame conduct risk (Miles, 2021b). Instead, they posit financial actors should seek to understand conduct risk through a “behavioural lens” rather than attempting to create exhaustive “checklists” of good and bad conduct (Miles, 2017). Primarily, this involves reflecting on a firm’s “social licence” (Blomfield et al., 2018) to consider:

- who a firm’s stakeholders are, other than its management and shareholders;
- what the firm offers to those stakeholders; and
- the available information sources to gauge the firm's behaviour evolution.

In seeking to appraise social licence, behavioural scientists advocate for the abandonment of “performative” compliance and oppressive surveillance to triangulate: (i) escalation data (examples: client complaints, errors) (Miles, 2021b, Grodecki, 2018); (ii) anonymous and non-anonymous staff reviews (examples: comments on the employer review website Glassdoor and exit interviews combined with turnover statistics) (Grodecki, 2018); and (iii) lessons learned analysis regarding incidents that have occurred at comparable firms (McCormick and Stears, 2014). Advocates of such “culture audit” approaches contend they are flexible to keep pace with the continually evolving conduct

landscape, be it because of technological disruption (Culley, 2020b) or black swan events such as the COVID-19 pandemic (Stubbs, 2021). It is better to acknowledge that humans are not rational actors but act on heuristics and out of tribal loyalties (Valine, 2018). Doing so is likely to yield more meaningful results than (a) engaging in esoteric attempts to define or (b) placing too much reliance upon quantitative methods to evaluate conduct risk. Traditional risk management favours treating conduct risk as a subcategory of operational risk, particularly to calibrate a firm's capital (Baijal, 2017, Baijal, 2018). Yet, precise categorisation and quantification could not contain the "lawful but awful behaviour" at the root of the 2007-8 financial crisis and other scandals (Miles, 2017).

The relationship between a firm's publicly stated values, its culture (or cultures) and conduct risk is intrinsic (Ehrenhard and Fiorito, 2018). Early iterations of the FCA's *5 Conduct Questions Programme* concentrated on the role of the board in setting standards of expected behaviour, commonly referred to as "tone from the top"(2020l)This held that conduct was not merely defined by a firm's "artefacts" (for example, official mission statements) but also through senior management's day-to-day interactions with the "rank and file." While entailing targeted initiatives such as video messages from a firm's Chief Executive or "town hall" meetings, the regulator opined that more mundane facets of leadership were perhaps more important. Central to this is fostering a "psychological safety" climate to encourage employees to speak up when they witness or suspect misconduct.

More recent iterations of the FCA's *5 Conduct Questions Programme* hold that the "tone from within" a firm's middle management is at least as important as board stewardship in shaping conduct and culture (Baijal, 2018, Grodecki, 2018). Even so, it is said that junior employees mimic the conduct of their line managers and leaders in the "informal organisation"(Scott, 2020), for example, a star trader. Furthermore, the FCA has been keen to raise awareness of risks emanating from the "conduct of the machine". Errant algorithms pose an array of new behavioural challenges (Culley, 2020a). Therefore, the FCA now places roles at the heart of conduct debates previously thought peripheral to them. These include software developers and quants (2020l).

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Often complimentary, sometimes conflicting, the myriad understandings of conduct risk derive from its relative immaturity as a concept, at least in the financial sector. Consequently, there is broad agreement in the literature that more research is required to help policymakers and practitioners calibrate their approaches to defining, identifying and mitigating it (De Pascalis, 2019, Daly and O Sullivan, 2020). Hitherto, the majority of contributions have (a) concentrated on conduct risks arising from banking operations (Baijal, 2018); or (b) been thought pieces rather than empirical studies (from now on, “Observation A” and “Observation B” respectively).

An excellent example of Observation A is that several papers originate from work undertaken by researchers at the Centre for Banking Research’s (“CBR”) Conduct Costs Project, which “aims to foster transparency in financial activity and to deliver a category of benchmarking which comprises the level of conduct risk of the banks, as an analytical tool for the banks and their shareholders” (2022d). The fact that behavioural risks in banks have received much attention is unsurprising. LIBOR rigging, anti-money laundering failings and numerous examples of miss-selling are a few of the bank-related conduct incidents that have dominated headlines over the past decade (Ehrenhard and Fiorito, 2018). Ehrenhard and Florito relate the corporate values enunciated by European banks in 2016 to their involvement (or lack of involvement) in such scandals, stating that “research into corporate values is rather scarce”. Nevertheless, they acknowledge their findings are limited to the 25 largest banks (Ehrenhard and Fiorito, 2018). These banks are either (i) facing a stiff challenge from disruptive technology firms, for example, in the payments and electronic money space (Wilson, 2021); or (ii) have decided to exit some product lines to “de-risk” or focus on core offerings, reportedly a common occurrence in the commodity markets (Payne, 2020).

These developments are potentially significant in scrutinising the effectiveness of conduct risk initiatives because non-bank firms usually operate different management structures and lack credit institutions' resources (2019c). Moreover, the cultures at non-bank firms are incredibly diverse, ranging from “start-up feel” and “tech firm” (MacKenzie, 2021a) to that of the traditional commodity brokerage with its roots in imperial-era commerce (Draper, 2014). Non-bank firms are far more numerous than their banking counterparts, with most in the UK solely falling under the jurisdiction of the FCA

for both conduct and prudential regulation (2016a). As a result, in the UK, few non-bank firms are supervised as intensely as banks. Interaction with the FCA is confined mainly to submitting filings and speaking to the Firm Contact Centre regarding administrative matters (2016g).

Observation B is somewhat predictable, given the researcher's difficulties collecting data from human participants. Practitioners, whether authors or participants, often lack the time necessary to conduct an ethnographic study or analyse reams of interview transcripts. This is to say nothing of the potential confidentiality and conflict of interest issues they would have to navigate. Practitioner papers such as Baijal (2017) and Baijal (2018) briefly examine definitions and values espoused in some investment banks' annual reports. Commonalities between keyword descriptors of conduct are identified. Still, the underlying assumptions that informed the banks' definitions and effectiveness in promoting consistency of understanding throughout different levels of the institution are scrutinised. Conversely, whilst academics are trained in various research techniques, many lack contacts in the industry. With some notable exceptions, "cold calling" busy experts to ask if they would be willing to participate in academic study is an exacting task, often with low prospects of success (MacKenzie, 2014).

The FCA, possessing hard and soft powers to mandate participation from the regulated, has sought to fill the research void through its *5 Conduct Questions Programme* and the use of section 166 (or "skilled person") reports. The Programme has drawn from interviews, roundtables, and surveys from all levels of authorised firms "in a bid to determine whether members understand their organisation's mission"(2018f) These initiatives suffer from some apparent limitations. Skilled persons are susceptible to capture. In addition, some participants may not be as forthcoming when face-to-face with a regulator as they might be in a setting where anonymity is guaranteed. Ironically, the quest for psychological safety extends to the regulated and the regulator in its drive to improve conduct.

### **4.3 Chapter specific methodology**

Based on the findings of the literature review, the author decided to reduce the gap in understanding how conduct risk is defined and understood by firms and their employees

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in the UK's non-bank investment sector. Although this sector has not yet received much attention in the literature, the FCA estimated that approximately 290 firms would be categorised as “non-small and non-interconnected” for prudential purposes (2021a). This means the FCA believes that if one of these firms were to fail to meet their overall financial adequacy requirements, it could pose significant risks to the UK financial system. In Finalised Guidance 20/1, the FCA encourages firms to consider the impact of a reputationally damaging conduct incident on their continuing viability (2020h). Hence, an opportunity exists to generate findings that could help firms and policymakers reflect on the effectiveness of their conduct risk-related initiatives taken to date. Additionally, this would help address one of the main limitations self-identified by Ehrenhard and Fiorito (2018) in their study of the effectiveness of corporate value statements published by European banks.

Between the Spring and summer of 2021, the author conducted 20 explorative semi-structured interviews. Seventeen of these were conducted with representatives of nine UK firms engaged in brokerage and trading activities. These included:

- eight senior managers (current and former chief executives, chief compliance officers, chief operating officers and chief risk officers);
- four middle managers, for example, persons who are responsible for overseeing a specific business unit without being approved by the FCA as senior managers; and
- five staff in non-managerial or front-line functions did not have managerial responsibilities in their firms when the interviews were conducted.

**Table 4.1** provides an overview of interview participants and their firms.

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**Table 4.1** *Overview of interview participants and their firms*

	<b>Firm 1</b>	<b>Firm 2</b>	<b>Firm 3</b>	<b>Firm 4</b>	<b>Firm 5</b>	<b>Firm 6</b>	<b>Firm 7</b>	<b>Firm 8</b>	<b>Firm 9</b>
<b>Firm size</b>	<b>Small</b>	<b>Medium</b>	<b>Large</b>	<b>Large</b>	<b>Medium</b>	<b>Small</b>	<b>Large</b>	<b>Medium</b>	<b>Small</b>
<b>Staff interviewed</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>
<b>Disciplines of staff interviewed</b>	Operations, management	Compliance, brokerage	Compliance, brokerage, IT, management	Compliance, management, sales	Anti-financial crime	Management, sales	Compliance	Distribution, sales	Risk
<b>Firm description</b>	The firm acts as a broker-dealer, predominantly in one asset class (base metals). It has a small trading desk that only serves wholesale clients using voice and electronic request for quote (“RFQ”) channels.	It is a medium-sized firm that offers broker-dealer services to wholesale clients active in trading derivatives (commodities and FX) and securities. It has a floor presence and is owned by a non-financial parent that actively trades physical commodities.	A complex firm that offers a variety of brokerage, dealing, and trading services to wholesale and retail clients. The firm is also active in providing non-investment-related financial services and unregulated activities. It has a floor presence.	The firm is a major player in retail brokerage, offering trading in CFDs, rolling spot forex, and spread betting. It serves a significant number of clients through online platforms. Nevertheless, its business model is arguably not as complex as Firms 2 and 3.	A medium-sized broker, like firm two but without a floor presence, is owned by a non-financial parent that actively trades physical commodities.	A small firm that only operates a multi-lateral trading facility to enable a small number of participants to trade FX products.	Major liquidity provider in securities, both to wholesale and retail clients. Holds membership of, or has access to, multiple trading venues worldwide.	The firm is a high-speed market maker in liquid derivatives (commodities, FX) and securities. The firm only provides liquidity to wholesale players. However, its activities are fully automated using complex algorithms.	Challenging securities brokerage firm offering services to wholesale and experienced retail clients. Has the ability to manage investments and engage in corporate finance activities.

### Firm size range key

Small firm range = 0-100 employees

Medium firm range = 101-300 employees

Large firm range = 301+ employees



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Facing challenges similar to those described in the literature review, the author had more success recruiting participants from some firms than others. All the same, the author believes that the following factors counterbalance this limitation:

- some firms were much smaller than others regarding headcount and services offered. The opportunity for “sub-cultures” to develop in these firms will likely be more limited than in larger firms. Employees in these firms will likely be very familiar with their colleagues through more frequent contact. Therefore, interviewing more staff in these firms could have resulted in “information overload” and repetition;
- interviewees hailed from firms whose staff are likely to have frequent interactions with one another, whether formally (e.g. through trading or clearing) or informally (e.g. through professional or personal networks). These interactions are likely to facilitate substantial cultural “cross-pollination”, which may influence their firms’ conduct aspirations declared in public statements;
- a relative balance in the spread of front office (broking, distribution, sales) versus middle and back office (compliance, IT, and operations) was achieved across the total pool of interviewees, ensuring the representation of different perspectives; and
- in most cases, the author could obtain more participation from people working at bigger and more complex firms. This is not necessarily a significant detriment, even where this was not the case. Some firms employ many staff to service a relatively linear business model. For example, one firm employs many IT developers to support a small number of online retail trading platforms. These platforms are functionally similar. This contrasts with another firm that employs comparatively fewer people but is active in a broader range of markets, using a variety of distribution channels.

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The technical validity of the claims made in this chapter must be viewed through the prism of these strengths and limitations. At any rate, the author believes this chapter's findings will serve as a helpful starting point for further debate and research.

To supplement the perspectives gained from these interviews, the author also spoke to three consultants who specialise in helping financial services firms design and implement conduct risk management frameworks. In the latest iteration of its *5 Conduct Questions Programme*, the FCA found that "some firms" had "engaged consultants to provide a peer review" of their conduct-related initiatives (2020l). Consultants are incentivised differently from employees, operating outside firms' pay and bonus structures. In assisting a portfolio of firms, consultants are likely to benefit from a "panoramic view" of firms' arrangements. This makes them an attractive temporary resource to senior management seeking to benchmark a firm's progress against its competitors. Identifying and suggesting solutions to problems is a consultant's *raison d'être*. Still, a consultant may be tempted to exaggerate issues to secure additional work. By contrast, an employee may seek to downplay weaknesses to maintain favour with a firm's senior management and, by extension, secure improved variable remuneration. It was the author's view that these differences would help generate richer findings.

To promote consistency, the conduct of the interviews was structured around the following topics:

- the sector and sub-sector of the interviewee's investment firm;
- discussion of the goals of the interviewee's investment firm;
- the interviewee's understanding of conduct risk;
- the internal conduct risk framework of the interviewee's investment firm; and
- whether knowledge of conduct risk is improving or declining in the interviewee's firm.

Referring to these topics, the author would formulate broadly similar open questions. Slight variations were made to account for differences between investment firms and roles. For instance, the consultants were asked about the *types* of firms they service, whereas employees of investment firms were invited to describe their firm's activities. The flexible semi-structured interview format also enabled the author to (a) probe

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interviewees' responses with further questions, (b) probe interviewees' responses with further questions, and (b) encourage interviewees to elaborate on their answers where they were brief or unclear. Some interviewees were more forthcoming than others. When an interviewee was willing to speak extensively about his experiences, the author limited intervention to points of clarification or, if required, steered the interview back on topic.

The author has purposefully reproduced interviewees' quotes in this chapter where possible. This is because the author hails from a legal and compliance background. Therefore, any attempts to paraphrase by the author would draw upon a lawyer's phraseology and vocabulary. This could unintentionally distort the meaning some respondents sought to convey. It is for this reason that the FCA recently encouraged firms to extend their frame of reference beyond the narrow lens of industry functionaries when drafting communications that are intended to be read by consumers:

*“Firms may consider their communications to be understandable, but that may only reflect the views of those involved in the design and sign-off of their communications – often legal, compliance and other financial services professionals.”*

### **FINANCIAL CONDUCT AUTHORITY (2021AK)**

Firms' public statements are often targeted at a broader range of stakeholders, including, for example, employees and wholesale customers. Nonetheless, the FCA's guidance remains relevant to other target audiences. Legal and compliance professionals are likely to constitute a minority of the workforce in most commercial enterprises. Furthermore, verbatim reproduction may allow future researchers from other disciplines to derive meaning from the quotes that differ from the author's.

Extracts from information defining or discussing conduct risk (or similar, e.g. “corporate values”) published by interviewees' firms were also obtained between mid-2021 - mid-2022. These included excerpts from annual reports filed at the UK Companies House and statements on firms' websites. Policies, procedures, and statements that firms are compelled to publish by law, regulation, or membership of an industry body (for example, statements of adherence to the FX Global Code) were excluded. It was thought that

including these may skew the results because such materials often borrow heavily from the relevant obligation(s) that require(s) them to be published. As an exception, any relevant excerpts from Pillar 3 statements were collected because these directly pertain to firms' specific risk management arrangements.

Relevant statements from the selected documents that discussed a firm's values or conduct risk were extracted and fed into a word cloud generator available through Microsoft Word. The primary advantage of using a word cloud is its aggregated output. Again, this helps to preserve the anonymity of the interview participants. Building on the approach taken by Baijal (Baijal, 2017, Baijal, 2018), The purpose of analysing these sources was to assess how much a firm's "formal" organisations inform the understanding of its employees.

### 4.4 Findings

*"So conduct risk, I mean, it's such a broad subject and we've done lots of soul searching over the last couple of years of what that means to us." [sic]*

#### INTERVIEW WITH A SENIOR MANAGER SPECIALISING IN FX TRADING (2021x)

##### 4.4.1 Declared values or conduct aspirations in firms' public statements

**Figure 4.1** illustrates the words most associated with conduct and similar concepts (for example, statements on "values" and "corporate responsibility") used in the statements of interviewees' firms.

**Figure 4.1** Word cloud constructed from publicly available statements made by interviewees' firms



It can immediately be seen from the prominence of terms such as “regulatory”, “regulations”, “compliance”, “rules”, and “laws” that good conduct is still firmly tied to notions of obligation. The more subjective and institutional-specific notions of “culture”, “conduct”, “principles”, and “standards” are deployed, but slightly less regularly. Derivations of the word “ethics” are not as standard. However, one firm’s group has a “Code of Ethics” and another a “Code of Conduct” encompassing values and details of internal compliance processes. “Harm”, a core focus of the FCA’s Investment Firms Prudential Regime (“IFPR”)(2021af), was missing from firms’ public statements.

“Client(s)” frequently appears, with “stakeholders” also present, if more infrequent, demonstrating that, like banks (Ehrenhard and Fiorito, 2018), firms are keen to be perceived as customer and patron-focused. Likewise, “TCF”, or “treating customers fairly”, is still referenced by some firms more than 15 years after the FSA first launched the initiative (2006). Despite featuring heavily in more recent conduct-related FCA initiatives, “accountability”, “diversity”, “transparency”, “outcomes”, and “behaviours” are seldom employed, also imitating banks (Ehrenhard and Fiorito, 2018). “Responsibility” and “fairness” are more popular. One firm expressly includes “discrimination” and “harassment” in its notion of “misconduct”. Otherwise, references

to non-financial misconduct in firms' public statements were sparse. One firm does use the term in its latest Pillar 3 disclosure in the context of conduct risk without defining it.

Improving conduct and culture is a continuous process, as opposed to a "one-off" project, which is reflected in words such as "continues", "evolve", and "increasing". Correspondingly, some firms and their groups seek the "consistent": (a) application of standards across "jurisdictions" or "global(ly)" or (b) provision of services to their clients. Yet only one firm specified that it sought to be "reliable" or "trustworthy" in its client dealings.

### **4.4.2 Employees' understanding of conduct risk**

All interviewees (a) demonstrated an awareness of the term "conduct risk" and (b) were able to articulate their understanding of it. This is despite the common complaint that it is "really very" (2021n) or "extremely" broad (2021aa).

In keeping with their firms' public statements and those of banks (Ehrenhard and Fiorito, 2018), conduct risk was described by several participants in terms of ensuring compliance with legal and regulatory obligations. "We look at conduct across the board [sic] [through the lens of] what is a regulatory requirement" (2021s), stated one senior manager. Another senior manager expanded on this by saying that his firm also interpreted conduct risk as extending to the activities of clients: "Conduct risk [is] where [sic] we try and ensure that all of our participants are conducting themselves in line with all of the obligations that we as a firm are responsible for..." (2021p). A manager in a surveillance function said that complex conduct issues are routinely escalated to his firm's in-house lawyers (2021o).

Also reflective of firms' value statements was a sense of responsibility for maintaining trust and confidence in the market (2021n). A head of sales asserted that conduct risk is "all about trying to maintain an orderly market", given the growth of trading algorithms (2021y). A senior FX trader commented that this was at this is "...one of the six pillars of risk that we follow as a firm [and] as an approved person [sic]. There is an undertaking by myself to behave in a certain manner when providing quotes in the market...we're all aware of the kind of expectations on us not to do certain things..."[sic] (2021j) Central to these considerations were anxieties about market abuse, "which is a form of conduct

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risk, I guess,” averred a desk head responsible for foreign exchange trading (2021x). A specialist in trading platforms recounted a broader understanding of conduct risk in the digital age:

*“the risks involved are...that we're going to make or break any messaging [limits]that the exchanges [have] in place... that will trigger... losses.”*

### **INTERVIEW WITH AN IT PROFESSIONAL (2021AD)**

By contrast, a more comprehensive understanding of conduct risk, including non-financial misconduct, was largely absent from interviewees’ accounts even though the FCA has recently strived to increase consciousness of this (2020f).

Harm, be it caused to clients, employees or a firm’s reputation, was only expressly mentioned by one senior management interviewee as core to his understanding of conduct risk (2021n). At first glance, this seems to mirror the lack of references in firms’ value statements. Even so, others alluded to it. Reminiscent of the “sunshine test”, a director stated that his understanding of conduct risk took the form of self-assessment questions that inform day-to-day decision-making:

*“Would I be happy...for that act... to be publicly known? Would I feel comfortable with this appearing in the press, for example, about me, or would I be happy to tell close friends or family about this act...? ...those are the sort of basic questions I always ask myself around anything that I'm doing.”*

### **INTERVIEW WITH A SENIOR MANAGER # 7 (2021Q)**

Another interviewee declared: “...frankly, we shouldn't really need regulation; we just know what the right culture and the way of performing is. It should be an inherent part of people's thinking these days” (2021p). The same interviewee added: “The rogues will always be the rogues”. Such sentiments contradict the “compliance by obligation” sense prevalent in firms’ value statements.

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Words commonly associated with exhibiting skill, care, and due diligence were absent from firms' value statements. This was cited as an example of misconduct by one risk manager:

*“...being negligent is itself poor conduct. So whilst...you [might try to use]... an algorithm to [intentionally] fox the market or do something,... being negligent, [in terms of] not having the right levels of systems and controls [in place] to ensure that you're overseeing an algorithmic process in the right way is itself a systems control failure.”*

### **INTERVIEW WITH A SENIOR MANAGER # 9 (2021s)**

For these reasons, some interviewees viewed conduct risk partially through the prism of fitness and propriety to proactively detect, prevent and respond to harm. “Conduct starts for us at a recruitment level”, claimed one desk head. (2021x) This desk head continued to state that he had taken it upon himself to provide training to his staff on the applicability of the FX Global Code to their activities, with the dual objective of ensuring: “alignment of our culture and our ethics with our regulator (sic)” and that clients are treated “with the utmost consideration”. Similarly, a risk manager held that it is a “financial firm’s job to determine which of their staff...are fit and proper when there's been a conduct breach” (2021s) Some firms champion integrity in their value statements, determining whether someone is fit and proper.

Not all interviewees felt that considering conduct risk was limited to a firm’s regulated business activities. For example, a senior manager at a foreign exchange trading venue (authorised by the FCA as an investment firm) said: “We have agreed to uphold the principles of the [FX] Global Code of Conduct, which...came into place over the last few years” (2021u). He continued: “That predominantly required us to ensure that we had some very strong monitoring capabilities in place to spot market abuse and other types of...unacceptable behaviour”. “But there's no such obligation for us on the spot side”, maintained the interviewee, referring to the venue’s support for liquidity provision in the unregulated spot foreign exchange market. He added: “...we didn't really have any particular concerns [as] there aren't fixes in those markets, so there isn't really anything to try and manipulate.” Consequently, he concluded: “really, we just leave it to our customers who are, you know, the financial institutions that are servicing their



customers.... to ensure that they are behaving appropriately.” Except for certain rules that all trading venues are required to make public<sup>1</sup>During the period the author conducted the research, the firm did not publish any value statements or similar materials on its website.

#### **4.4.3 Third-party consultants’ perspectives on firms’ and employees’ understanding of conduct risk**

Such perspectives are perhaps why some third-party consultants still have little faith that the FCA’s initiatives to improve understanding of conduct risk are cutting through. “I really think people are struggling with simply understanding conduct risk” (2021h), proclaimed one consultant who has provided conduct training to professionals at various financial institutions for a decade. He was particularly critical of the continued tendency of many actors to interpret conduct risk exclusively through a legal lens: “I have also said that...beyond the regulatory implications and the legal implications because it's not just what the FCA say, there's potential that these matters there could be a complaint in terms of responsibility and accountability”. A behavioural scientist who helps firms design risk programmes shared these concerns:

*“I haven't seen enough change within firms to feel confident that there isn't going to be some other issue coming out of financial services.”*

#### ***INTERVIEW WITH A CONDUCT RISK EXPERT (2021F)***

Commenting on cultural change since the 2007-08 financial crisis, he said:

*“you can tinker around with things. But if your soil is still toxic, it doesn't matter. If you change the plants in that soil, you will still produce the same outcome.”*

#### ***INTERVIEW WITH A CONDUCT RISK EXPERT (2021F)***

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<sup>1</sup> Article 2 Commission Implementing Regulation (EU) 2016/824.

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The FCA has encouraged firms to reflect on how their incentive structures influence conduct risk. This has led some firms to devise criteria for awarding bonuses that reward good conduct. The behavioural scientist expressed reservations about this approach:

*“...incentivising people to do the right thing...I struggle [with] for two reasons. The first one is that if you start to talk in those terms, it suggests that that's not a standardised part of everybody's job. So there are a lot of conversations about whether to pay people bonuses for meeting environmental targets or to pay people bonuses for meeting ethical targets, whatever that means. And I think that's dangerous because that sort of suggests that that's something you do.”*

### **INTERVIEW WITH A CONDUCT RISK EXPERT (2021F)**

It would appear from the value statements sampled and interviews that firms and their employees agree. Incentives were barely mentioned in understanding conduct risk regarding the effects of rewarding good conduct or penalising poor conduct. Interviewees were not directly asked for their views on the relationship between conduct and remuneration. However, the FCA has recently highlighted poorly conceived compensation arrangements as a critical driver of harm in the wholesale brokerage sector (Walls, 2019). More than two years on, the behavioural scientist remarked:

*“I think we're still in that space where[...]banking perceives itself to be in a position, and particularly trading, if there's a slight sense of superiority, master of the universe element that's still there, slightly chastened in some cases, but the astronomic pay scales is still there, and that's you know, the fact those dynamics have remained unchanged is why we need things like the SMCR regulation, which is basically a way of saying the only way we can get a handle on this stuff is to put senior people within the organisation in the frame and get them, if you like, to solve the problem underneath it because it's not something a regulator can get its hands around [sic].”*

### **INTERVIEW WITH A CONDUCT RISK EXPERT (2021F)**

The behavioural scientist contended that the design of training courses and policies were [and are] a root cause of poor understanding of conduct risk:

*“I recognise that our techniques weren't always landing with the target audience. And I recognise that because I'd been the person who had imposed many things on the firm. And so I started to look for solutions because I wasn't happy with what we were doing. And it was all being done in my name, as well as the policies, by issuing training courses and being invited to training by me, not literally by me, but by the machine. And so I started to think, well, this isn't landing, and if we're trying to influence people, how can we do it better?”*

### **INTERVIEW WITH A CONDUCT RISK EXPERT (2021F)**

Firms' presentation of their control functions has also been counterproductive, averred the behavioural scientist:

*“I think, for example, the way organisations have presented their compliance and risk functions is very often seen in the same way. And I'll be slightly facetious here...as potentially the facilities managers in the buildings. Right. So I don't have to worry about with the toilet paper there because somebody else has gone out and done that...what the facilities people do...detect compliance and risk management: “You know, I'm here to make money. They're headed to sort that stuff out. So I'll just crack on until they tell me I can't.” And that was very much this kind of, you know...and partly the compliance functions didn't help... And the risk function didn't help in the way they communicated in the training they gave in the systems that were in many cases very restrictive...And, you know, if a system allows you to do something, you could make a natural presumption: “Well, sure, if they didn't want me to do that, then the system would have blocked it.””*

***INTERVIEW WITH A CONDUCT RISK EXPERT (2021F)***

Aside from general pronouncements about (a) expected behaviour and (b) the need to seek advice from compliance in certain situations, the value statements reviewed for this study exemplify the behavioural scientist's concerns. Some firms in the sample provide matter-of-fact descriptions of their control functions in their "Pillar 3" disclosures. These do not articulate the roles of these functions vis à vis managing conduct risk or setting cultural direction. Nor are Pillar 3 disclosures likely to be widely read by frontline staff. It is possible that many employees do not even know they exist. Even among those aware, Pillar 3 disclosures may be perceived as a regulatory formality rather than a practical guide informing the day-to-day conduct of business.

Finally, the behavioural scientist perceived a risk that technological advancements could also undermine efforts to improve employees' sense of responsibility for their conduct:

*"The further we are as human beings away from the thing that we're impacting, if we can't see it, we can't touch it. We can't feel it. We're not very good at assessing the impact of what we're doing."*

***INTERVIEW WITH A CONDUCT RISK EXPERT (2021F)***

To address these shortcomings, the behavioural scientist advocates:

*"really starting to think about the human beings that you're trying to influence and how can you do that in a way that gets the best out of them, that actually provokes the reactions you want and understands the basics of human decision making."*

***INTERVIEW WITH A CONDUCT RISK EXPERT (2021F)***

As **Figure 4.1** exemplifies that words associated with technology and its ethical use were scant in firms' public statements. This may be a surprise given technology's role in broking and trading today, from algorithmic deployment to cyber security.

### 4.5 Discussion

The findings suggest a correlation between firms' value statements (or their absence) and their employees' understanding of conduct risk, especially at the senior management level. There are a range of possible explanations for this. First, most senior managers have probably input into drafting their firms' value statements in small and medium-sized organisations. Second, as surmised by Ehrenhard and Fiorito (2018) in the context of small banks, even if senior managers in small and medium-sized organisations do not directly contribute to drafting their firms' statements, they may be more intimately exposed to their contents. This is because there is probably a higher likelihood that they would regularly participate in their firms' board meetings and executive committees than in larger firms with more management layers. Accordingly, they may be more frequently exposed to board utterances about their firms' values. Third, the impact of a conduct incident at a small or medium-sized firm may be more profound than at a more prominent firm. News of a severe event is likely to travel quickly in a small and medium-sized firm where employees are very familiar with one another. This might prompt more "soul-searching" than in a large, global banking institution where many co-workers will be "anonymous" to one another.

On the surface, there is little evidence that "new ways of thinking" about conduct and culture promoted by Miles (Miles, 2017, Miles, 2021b) are greatly influencing small and medium-sized enterprises active in brokerage and trading. Interpreting conduct risk through a legalistic lens continues to predominate. Behavioural-led approaches are yet to permeate the three elements of their organisational culture as identified by Schein (Grodecki, 2018, Manes, 2019): espoused values, artefactual information or underlying assumptions. It can be inferred from the value statements and interviews that many brokerage and trading professionals believe that acting in clients' interests is best served by ensuring a fair and efficient market. This might be a form of "social licence". It is curious, then, that some of the practices cited by the FCA in its "Dear CEO Letter" regarding wholesale market brokerage firms (Walls, 2019) are undermining market confidence, such as payment for order flow and "poorly designed" personal account dealing policies. This could indicate that conduct-related initiatives have had a more

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significant impact on the culture and conduct of wholesale brokerage and trading firms than believed. Alternatively, interviewees' comments about market fairness could signify "talking the talk" without necessarily "walking the walk."

One of the significant limitations of studying statements and using interviews as a methodology is that it does not provide any insights into "what actually happens" in an organisation. Accordingly, a researcher must draw upon ethnographic techniques to analyse the relationship between firms' value statements and staff conduct in more depth. Unfortunately, given the author's commitments as a practitioner, using ethnographic methods in this study was impossible. Therefore, a subsequent researcher could build upon the findings of this study by examining the effect of firms' statements on shaping culture and conduct in the "informal organisation".

It is also possible that the third-party consultants' concerns about "normative compliance" are reflected in commonalities between firms' value statements. "Groupthink" could arise within peer firms (Valine, 2018). Complex networks of professionals within a specific sector could lead to sub-cultures and tribal loyalties existing *across* firms. Relationships built on a trading floor or within electronic chatrooms could prove resistant to penetration from "insider outsiders", for example, the representatives of compliance or risk functions. The conduct of these groups may exert upward pressure on firms' values. Fearing ostracism, firms may seek to formally or informally align their understanding of conduct risk. On the other hand, firms and their employees may feel a sense of security if their values and definitions of conduct risk are aligned with those of their peers. "Safety in numbers", i.e. "if we're wrong, then everyone else is wrong", could lead some to believe that the threat of sanction and reputational impact therefrom would be diminished in an environment with few outliers. Besides, some firms may attempt alignment merely to stay competitive.

Participants were asked about levels of formal cooperation between brokers and trading firms in addressing emergent conduct risk issues, such as in the context of algorithmic trading. Opinion was divided. "I would say, in my experience, there's no collaboration between brokers"(2021r), said one anti-financial crime specialist. Another professional was outright suspicious of any forms of collaboration between market participants on

matters of conduct. Whereas Lynch (2018) heralds the FX Global Code as a “powerful instrument” to help firms “manage their conduct risk” instead of solely relying on “imprecise” “organisational values”, this professional was scathing of its utility:

*“The FX Global Code tries to never be prescriptive around any behaviours. So we ask them, for example, of the triennial review of the code, which is going on now, to say that the avoidance of adverse selection in the management of market impact are not legitimate uses of last look. And they wouldn't do it. In fact, in their initial working group paper on that, which is not public, they include it specifically the ability of people to use it for those to use it for the purposes of managing those risks. Right. Which we think is just incredible, frankly. And that was coming, by the way, from some of the world's biggest banks, biggest commercial banks. So I personally think that my gut feel is the market has broadly forfeited its right to self-regulation.”*

### **INTERVIEW WITH A SENIOR MANAGER AT AN ELECTRONIC MARKET MAKER (2021v)**

This contrasts starkly with the views of the interviewee, who said he used the FX Global Code to educate his staff on conduct matters. Declaring that “all participants should be invested in a fully functioning market”(2021x), he said he is “Open where possible to discussion amongst participants to [...] combat the risks, and I'm all for kind of collaboration around table meetings”.

Gauging informal cooperation between employees at different firms is a much more challenging endeavour for researchers and conduct specialists alike. Through personal contacts, Zaloom (2006) managed to gain almost unparalleled access to observe the conduct and informal “codes” that bound pit traders at the Chicago Board of Trade. However, most informal cooperation between brokers and traders has now moved to devices that are invisible to the naked eye. Even popular internet chat mediums that were probably in their infancy during Zaloom’s comparative stint as a trainee trader on a computerised trading floor in the early 2000s are now “old hat” in the age of WhatsApp and Telegram. The growing conduct challenge posed by these applications, often loaded on personal equipment and made very popular by the COVID-19 pandemic, became apparent in light of some recent high-profile enforcement actions (Willems, 2022)Even

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bans on using mobile phones on the desk are not foolproof, as hybrid and remote working practices have become normalised. Hence, even ethnography suffers from blind spots in seeking to penetrate an organisation's reservoir of values.

Aside from these limitations, several factors affect the reliability of the chapter's results. First, the sample of data collected and reviewed was relatively small. In 2021, the FCA estimated 290 small and non-interconnected firms. This chapter examined the practices of nine firms. This might limit the study's representativeness. Still, the author contends that the sample size was respectable because of the difficulties in obtaining access or agreement to participate. Second, the author acknowledges that because interview participants were recruited from within his professional network, this could create a perception of bias. Yet, many of the participants were second-degree contacts who had not personally known the author before the study was conducted. Thirdly, as set out in this chapter's methodology section, the interviews with all participants were structured around the same topics to promote consistency and reduce potential bias. Furthermore, interviewees are quoted verbatim. This enables readers to conclude the messages the interviewee sought to convey. The simple approach also promoted methodological consistency in collecting and analysing secondary data with the assistance of a word cloud. Be that as it may, it is acknowledged that the firms sampled had produced documentation of varying quality and length. Certain words may reappear more often in longer documents. This variety of output is a finding in itself. The author sought to collect the same documentation from each firm to mitigate this impact. Finally, the author strived to describe the methodology in this chapter as clearly as possible to assist future researchers seeking to reproduce its results.

Consultants interviewed for this study believe that the traditional "presentation" of compliance and risk and "tired" training techniques have hindered understanding of conduct risk. Certain new modes of communication are challenging for "outsiders" to penetrate. Policymakers and firms, then, will need to turn to novel solutions to connect with an increasingly disparate constituency.

One possible solution is for policymakers to enlist persons found liable (civil law) or guilty (criminal law) of conduct breaches for educational visits to firms. This could harness the



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power of the “informal” organisation or networks (Scott, 2020) as employees may be able to “feel” (Ehrenhard and Fiorito, 2018) negative experiences of a fallen peer than to the hypothetical learning scenarios curated by “econs” (Niederjohn and Holder, 2019), i.e. “rational” actors in control functions who are remote from the everyday “cut and thrust” of business operations.

Precedents for such visits already exist. Notorious ex-Barings Bank rogue trader Nick Leeson has been giving conduct-infused speeches to a range of commercial organisations for years (Carroll, 2019). Similarly, former UBS rogue trader Kweku Adoboli was reported to have warned “City workers of the perils of reckless behaviour” in a series of training sessions given to staff working for some UK financial institutions before his deportation in 2018 (Dakers, 2015). However, these examples emanated from initiatives firms took rather than being part of any coordinated effort by the FCA, like the *5 Conduct Questions Programme*.

Measuring the success of the visits and initiatives involving Leeson and Adoboli in improving employees’ understanding of conduct risk is complex. Their contents and discussions will likely be subject to Chatham House Rules and commercial confidentiality. The closest comparable situation is perhaps the visit of current or former prisoners to schools as a part of structured programmes designed to deter young people from offending (Gaffney et al., 2021). Given the demographic differences between professionals and school children, any lessons learned from these prisoner programmes are likely to be limited. Thus, the FCA could combine a pilot of the “rogue trainer” initiative with ethnographic research performed by independent third parties. This could help evaluate the initiative’s success in driving organisational change, particularly in furthering the practical understanding of conduct risk and desired values.

The findings of this Chapter have a range of theoretical and practical implications. Theoretically, this study contributes to the growing corpus of applied behavioural economics work undertaken in the financial services sector. The impact of tribal heuristics has previously been examined within firms (Miles, 2015) (Scott, 2019). This Chapter’s findings extend this slightly to offer evidence concerning tribal loyalties between firms. It is plausible that social networks exert pressure on firms’ values from the grassroots, which those firms do not always detect. Therefore, firms might be

rationalising their actions or inactions through conscious or unconscious reference to those of other firms or personalities at other firms. Senior managers might not always be aware that they are engaging in groupthink. Cultural contagion (Undated-ae) is a potential by-product, especially as the junior and middle-ranking employees at investment firms perhaps have greater access to senior management than their equivalents at large investment banks. This contagion could have profoundly negative consequences for broader society if left unaddressed. For example, a cross-market contagion of poor culture was held to be one of the root causes of the LIBOR scandal (Miller, 2013).

In January 2023, the FCA sent its latest portfolio letter to the chief executives of wholesale brokerage firms (2023n). In this letter, the FCA asserted:

“While we have seen some improvements in governance and compliance controls at larger firms, our work suggests wholesale broking firms generally continue to be behind others in stopping poor conduct and improving culture.”

Thus, practitioners at wholesale brokerage firms can use the findings of this Chapter to evaluate the effectiveness of their conduct statements. Where firms continue to view conduct through a legal rather than behavioural lens, they should consider whether their statements are designed to influence conduct or merely offer a legal defence. Moreover, senior managers might pause to reflect on the likely reception this approach is expected to receive from a regulator operating within a principles-based regulatory system. Furthermore, senior managers may wish to take steps to counteract the effect of negative cultural contagion on their conduct statements. For example, they should ask whether alignment with materials produced by other firms is always desirable. A senior manager should exercise a healthy scepticism when a staff member claims that their peers at other firms are, or are not, doing something.

### **4.6 Conclusion**

In conclusion, this chapter finds a correlation between brokerage and trading firms' publicly declared values and their employees' understanding of conduct risk. However, both are in some way from the FCA's desired focus on non-financial misconduct, diversity, harm, and transparency.

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To make understanding of conduct risk more visceral amongst industry practitioners, the FCA could seek to draw upon the experiences of past miscreants as cultural “shock and awe”. This is consistent with other conduct-related initiatives recently taken by the FCA, such as the Consumer Duty and IFPR. Both have encouraged firms to look beyond their usual formal and informal networks of cooperation in (a) identifying risk and (b) gauging the effectiveness of communications.

Brokerage and trading firms could run focus groups or controlled trials of value statements with mid-tier and entry-level staff. These may yield powerful insights if held during the immediate aftermath of training involving the earlier subjects of enforcement actions. Armed with relatable, real-life experiences as a reference, frontline staff should be better equipped to identify a broad spectrum of potential conduct vulnerabilities in their firm's business model. This could include indications of non-financial misconduct or the unethical use of technology, which, if left unchecked, could become predicates to more “traditional” conduct risks. A good example would be bullying someone to aid and abet rogue trading.

This “lived experience” would also emphasise the collective nature of conduct risk identification and mitigation. The consultants interviewed for this study observed this rather than being perceived as an exercise driven by control functions. It would also reinforce this by drawing a stronger link between the remuneration structures outlined in firms’ mandatory IFPR disclosures and their (often) self-imposed value statements. Finally, to further foster a sense of ownership in shaping culture, firms should permit their grassroots employees to participate in the value statements themselves.

## **Chapter 5      Some professional insights into UK investment firms' efforts to comply with the provisions of MiFID II RTS 6 that govern firms' conduct of algorithmic trading**

### **5.1 Introduction**

On 3<sup>rd</sup> January 2018, the second Markets in Financial Instruments Directive (“MiFID II”) was entered into force by the European Union (“EU”). MiFID II introduced EU-wide organisational requirements for firms engaged in algorithmic trading (from now on, “AT”) for the first time (Schu and Lee, 2022). Capturing trading “where a computer algorithm automatically determines individual parameters of the orders with limited or no human intervention” (Schu and Lee, 2022), the reforms sought to address anxieties caused by events such as the Flash Crash (Busch, 2016). Largely enshrined in Commission Delegated Regulation 2017/589 (still commonly referred to as “RTS 6”, the abbreviation for “Regulatory Technical Standard 6”, the regulation’s pre-adoption name), the requirements prescribe the implementation of pre-and post-trade controls to fulfil the aspirations of Article 17 MiFID II. These include requiring firms to devise transparent methodologies for the testing and deployment of algorithms, the establishment of change control processes, annual assurance, setting price collars<sup>2</sup> and execution throttles<sup>3</sup> and the employment of real-time risk monitoring. That these requirements were enacted by a delegated regulation rather than through its parent directive (MiFID II) was intentional<sup>4</sup>. Policymakers sought to limit the scope for variation in their interpretation between EU Member States, some of whom were perceived to be pro-innovation (mainly the UK, Ireland and the Netherlands) and others sceptical thereof (mostly France and Italy) (Karremans and Schoeller, 2020).

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<sup>2</sup> For a definition, please see the “Pre and post trade controls “ section (Articles 15 and 17, RTS 6”).

<sup>3</sup> Per note (1) above.

<sup>4</sup> In the EU, regulations directly apply to Member States, i.e., they do not need to be transposed into domestic legislation. By contrast, a directive only becomes relevant in a Member State once that state has transposed it through the enactment of national legislation.

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Central to the aims of RTS 6 is the mitigation of conduct risk (Culley, 2020) (Stangl, 2015). For example, Article 5 states that the prevention of disorderly conduct motivates the “behavioural testing” of order execution algorithms (Raschner, 2021). However, supervisors do not have the resources to scrutinise firms’ AT environments thoroughly. Accordingly, RTS 6 places reliance on human oversight performed by firms’ senior managers and control functions instead of constant external supervision, e.g. by a regulator or trading venue<sup>5</sup> (Schu and Lee, 2022) (Stangl, 2015). Consequently, the quality of that oversight is heavily dependent on firms’ recruitment, training, and organisational structure (Stangl, 2015). RTS 6 was retained in the UK after the end of the Brexit Transition Period. The UK Financial Conduct Authority (“FCA”) has supplemented RTS 6 with its guidance to wholesale trading firms (2018b) Some argue that this has gone further than RTS 6 by expressly demanding that firms “do more work to identify and reduce potential conduct risks created by their algorithmic trading strategies.”

Drawing upon insights from practitioners upon whom MiFID II’s effective implementation is so dependent, this chapter seeks to analyse UK investment firms’ efforts to comply with RTS 6. This chapter focuses on the substantive provisions of RTS 6 governing algorithmic deployment (found in Chapters I and II). Accordingly, this chapter does not address business continuity (Article 14), security (Article 18), direct electronic access (Chapter III, covered elsewhere, for example, in Culley (2022)) or the additional controls that clearing members must implement (Chapter IV). This chapter finds practitioners understand the requirements in RTS 6, even if some lack knowledge of algorithms, coding, and algorithmic strategies. Interviewees’ firms have, in the main, used their best efforts to implement RTS 6 and broadly support its aims. Fatigue, complacency, cost pressures, an overreliance on external knowledge and generous risk parameter calibration pose the most significant risk of undermining the effectiveness of firms’ controls.

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<sup>5</sup> Commission Delegated Regulation (EU) 2017/584 (still commonly known as “RTS 7” to MiFID II) requires EU-based trading venues to permitting AT to adopt a range of systems and controls to mitigate the risks arising therefrom. RTS 7 is outside the scope of this article.

The remainder of this chapter is structured as follows. First, a literature review considers previous analyses of MiFID II's AT regime. This review helped to identify the opportunity for further research, which is this chapter's subject. Second, the methodology used to conduct the study is stated. The third section details the findings from the research. The findings are set out under each of the specific provisions of RTS 6 to which they relate. Next, a discussion section relates the chapter's conclusions to those of previous works studied in the literature review. This section also makes recommendations for practice, regulatory reform, and future research. Finally, a conclusion summarises the chapter's implications for the future performance of AT in the UK.

### **5.2 Chapter specific literature review**

MiFID II and particularly its regulations governing AT have hitherto been under-researched topics in the financial market literature (Karremans and Schoeller, 2021). Early analyses have predominantly, but not exclusively, been conducted through (a) a legal lens and (b) are not based on original empirical data. These critiques offer evaluations of MiFID II's AT regime from one of two broad perspectives. The first, a macro-regulatory perspective, considers, for example, whether (a) the scope of the AT regime should be extended to cover order routing as well as execution and investment decision-making algorithms (Pereira, 2020); and (b) developments in artificial intelligence ("AI") are already rendering it obsolete (Azzutti, 2022). The second, a micro-regulatory perspective, considers, for example, whether (a) the self-testing of algorithms under Article 7(3) RTS 6 is desirable from a public policy perspective (Raschner, 2021) or (b) RTS 6's annual notification requirement is too generous to keep pace with firms' constantly evolving business models (Comana et al., 2019). An initial analysis of the MiFID II AT package contended that it was too premature to conclude how market participants would receive it, i.e. at the micro-regulatory level (Woodward, 2017).

This study's focus is micro-regulatory: how investment firms which have been dubbed the “first line of defence”<sup>6</sup> in the oversight of AT (Azzutti, 2023) have grappled with RTS 6's operational requirements. Accordingly, the remainder of this literature review will focus on other contributions that have sought to assess the effectiveness of RTS 6's AT-related provisions.

The AT regime in RTS 6 was forecast to impose significant compliance costs on investment firms (Yeoh, 2019). This is because RTS 6 places reliance upon firms to act as gatekeepers (Čuk and Van Waeyenberge, 2018). The technical resources and expertise required to comply with RTS 6 could act as a barrier to entry that inadvertently benefits larger firms (Čuk and Van Waeyenberge, 2018). Furthermore, it is argued by some that the regime's complexity frustrates consistent application (Sadaf et al., 2021). European legislators may have underestimated the impact of specific provisions in MiFID II's AT package on firms deploying simpler order execution algorithms (Conac, 2017).

Constrained by technical and knowledge limitations, investment professionals are compelled to operationalise the rules in ways that undermine their effectiveness (Sadaf et al., 2021). For example, algorithms are categorised subjectively to determine the regulations that apply to them (Lenglet, 2011). However, given that regulators are even more remote from firms' algorithmic processes, granting some latitude regarding how to apply the requirements enshrined in RTS 6 was a necessary compromise (Seyfert, 2021). This was the critical driver for MiFID II's designers opting for a more principles-based approach to its construction, as opposed to the rules-based approach taken in its sister initiative, the Market Abuse Regulation (“MAR”) (Sadaf et al., 2021). A case in point is MAR's prescriptive approach to defining what constitutes market manipulation in the context of high-frequency trading (“HFT”). In contrast, MiFID II holds that anyone deploying trading algorithms could, in principle, be held responsible for such behaviour (Čuk and Van Waeyenberge, 2018).

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<sup>6</sup> In traditional audit practice, a firm's “business areas are the first line of defence” in a “three lines of defence model” where the second and third lines refer to the control and internal audit functions respectively (Bank of England, 2023).

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In the UK, which some observers perceive to favour “light touch” regulation, political dynamics are likely to encourage even more decentralisation in implementing RTS 6 than in many other European states that remain members of the EU (Karremans and Schoeller, 2021). Still, the UK is one of the few European jurisdictions with competent authorities and trading venues known to have intervened where weak control environments related to issues outlined in RTS 6 have been detected (Schu and Lee, 2022). Notable examples include: (i) ICE Futures Europe taking disciplinary action against Allston Capital LLC (2022b) for failing to prevent its employees from engaging in disorderly trading in Euribor and Gilt futures using trading algorithms; and (ii) a firm adjusting its algorithm and control framework in response to concerns raised by the FCA’s surveillance unit (2021ai). In addition, the FCA has built on RTS 6 by issuing good practice guidelines that encourage firms to (i) maintain inventories of their algorithms and associated risk controls, (ii) perform due diligence to identify conduct risks posed by their algorithms, and (iii) assign a dedicated project manager to oversee such processes (Schu and Lee, 2022). Moreover, in doing so, the FCA makes a clear connection between RTS 6 and its expectations based on the Senior Managers and Certification Regime (“SMCR”) (Schu and Lee, 2022). The SMCR imposes standards of accountability on firms’ key employees that are currently unique in Europe (2023a). This is significant given that, paradoxically, some commentators have asserted that the complexity of RTS 6’s requirements has increased conduct risk (Stangl, 2015).

Challenges associated with the practical implementation of exacting AT-related legislation were explored by Coombs (2016) in the context of Germany’s Hochfrequenzhandelsgesetz (English “High-Frequency Trading Act”, from now on “German HFT Act”) (2021l). Widely acknowledged as the inspiration for much of RTS 6 (Karremans and Schoeller, 2021; Seyfert, 2021; and Lenglet and Mol (2016), the German HFT Act was passed in 2013. Drawing upon data collected from 15 individual and group interviews with critical stewards in AT governance processes, including compliance officers, IT (Information Technology) staff and regulators, Coombs’s study found that:



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- (1) some small enterprises were openly non-compliant with obligations imposed by the German HFT Act because of a lack of understanding concerning the functioning of algorithms developed by third parties;
- (2) “creative interpretation” of the German HFT Act’s rules is commonplace, particularly with regards to the “tagging” and notification of algorithms, leading to inconsistencies between firms and
- (3) notification requirements often struggle to keep pace with the evolution of algorithms, undermining their utility to regulators, but
- (4) despite some of its shortcomings, some believed the German HFT Act had had a “professionalising impact” on the culture of proprietary HFT trading firms.

Although it does not pertain to MiFID II, Coombs’s research offers insights into the possible challenges and benefits of implementing RTS 6. Given that many start-ups labour under tight resource constraints (Sheridan, 2017), Coombs’s findings remain relevant to firms grappling with the pan-European RTS 6.

The absence of academic research into the functioning of RTS 6 has not precluded the European Securities and Markets Authority (“ESMA”) from conducting its consultation into the functioning of the MiFID II’s AT regime (2021 aj). ESMA’s review was wide-ranging. This chapter focuses on investment firms’ feedback on the elements of RTS 6 that directly govern their AT operations. First, to avoid uncertainty, most respondents favoured retaining the current definition of AT in RTS 6. A minority saw value in distinguishing between “simple” and “complex” algorithms, arguing that this would aid a more proportionate application of RTS 6’s requirements. Based on the feedback received, ESMA decided against changing the definition of AT. Second, most respondents favoured improving RTS 6’s “behavioural testing” regime to make it more realistic. It was widely felt that current stress testing obligations were conducive to generating artificial and unhelpful results. Allowing for more significant interaction between test and production environments and promoting consistency between the test environments offered by

trading venues were among the proposals to address this. To reduce the possibility of conflicts of interest undermining testing, some called for testing to be performed by a dedicated team independently of developers. Third, participants in the review did not favour ESMA's definition of “disorderly trading conditions” as it was thought this might not accommodate the myriad differences between different market structures and trading styles. Finally, many practitioners felt that the annual self-assessment requirements in RTS 6 suffered from a lack of guidance, leading to varied output that is of questionable use to national competent authorities. Even so, there was a consensus against introducing a templated self-assessment that could lead to the genesis of a “one size fits all” “box ticking” approach across firms and markets.

An extensive review of the UK's onshored<sup>7</sup> AT regime was absent from the HM Treasury's recent Wholesale Markets Review (2022v). An examination of the FCA's latest Regulatory Initiatives Grid published in May 2022 (2022q) suggests that a review of the UK's AT regime, like that undertaken by ESMA, has not been conducted in the UK authorities' immediate plans. It remains to be seen whether “Big Bang 2.0”, initially advanced by Prime Minister Rishi Sunak whilst serving as Chancellor with the intent of boosting the UK's competitiveness as a global hub for financial services (Parker et al., 2022), will prompt a change in this position. Yet, UK regulators have recently solicited views on whether to refine or extend it to meet challenges posed by the growth of AI in financial services (2022f).

Concerns about the transparency and “explainability” of models are among the AI-related challenges that have become a source of anxiety for regulators. Often referred to as the “black box problem” (Azzutti et al., 2023), related knowledge gaps are perceived to undermine the effectiveness of Articles 2 and 3 in RTS 6. These articles require that staff have a minimum level of understanding as to how a firm's AT systems operate (2023e). Some commentators, such as Azzutti et al. (2023), predict the impending displacement of rules-based, human-calibrated execution and trading algorithms by algorithms which use the output from machine learning models to trade (2023d). If this were to materialise, it would be tough for firms to observe the principle of accountability,

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<sup>7</sup> Refers to EU legislation retained by the UK after the end of the Brexit Transition Period.

which is fundamental to RTS 6. Be that as it may, practitioners have a consensus that AI-dominated markets are far from a reality. At the time of writing, rules-based algorithms continue to predominate in trading, with many machine learning models still relatively immature (2023b) (Culley, 2022) (Gozman et al., 2019).

### 5.3 Chapter specific methodology

This chapter aims to assist in reducing the existing gap in understanding identified by scholars such as Woodward (2017), regarding (a) how investment firms have interacted with RTS 6 since its implementation, (a) how investment firms have interacted with RTS 6 since its implementation and (b) associated implications for the AT regime's effectiveness.

The chapter focuses on UK investment firms' efforts to comply. Most firms that would have been subject to RTS 6's requirements when it was promulgated on 3<sup>rd</sup> January 2018 would have been based in the City of London. Whilst the Brexit Transition Period ended at midnight on 31<sup>st</sup> December 2020, the literature review findings suggest that there has not yet been any significant divergence between the EU and UK approaches to implementing RTS 6. Some divergence is possible as ESMA acts in response to the findings from its review of the AT regime. Nevertheless, this chapter's conclusions should still be insightful for practitioners and regulators working in EU Member States. Future researchers could compare the findings herein to the practices of firms active in EU Member States. This could help test for differences in the firm-level implementation of MiFID II's technical standards, a possibility raised by Karremans and Schoeller (2020).

Using semi-structured interviews, insights were obtained from 19 practitioners working for or with UK investment firms between Spring-Summer-Spring and Summer 2021. Headline topics were prepared in advance, but questions were not scripted to facilitate flexible and natural discussion. The topics included:

- investment firm sector/sub-sector and goals;
- design, deployment, (re) calibration processes;
- surveillance tools currently used;

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- staffing, and the ability of staff to spot conduct events caused by algorithmic activity; and
- the effectiveness of the UK's approach to mitigating algorithmic conduct risk.

Interviewees were recruited from the author's professional network, including personal and second-degree connections to whom the author was referred. Interviewees were selected for their knowledge of (a) AT as conducted by investment firms and (b) the regulatory framework that governs it. Participants included:

- 13 senior personnel employed by investment firms (a chairman, a chief executive officer, two chief compliance officers, the founder of a quantitative hedge fund manager, two heads of anti-financial crime functions, a chief risk officer, senior sales, and distribution professionals, two heads of a front desk, and a senior surveillance officer);
- three regulators who were recently involved in the supervision of firms that deploy algorithms;
- two trade surveillance experts: one working for a firm and another who works for a technology vendor that supplies market abuse monitoring tools to firms; and
- a third-party algorithmic trading expert who regularly assists firms in strengthening their systems and controls.

Adopting the classification of different AT operations outlined by the Dutch regulator (the Autoriteit Financiële Markten (2023e)<sup>8</sup>), the activities of the investment firms from which the participants were drawn include:

- automated traders (use algorithms to automate a proprietary trading strategy for a fund or own account):
  - a quantitative hedge fund (subject to the provisions of RTS 6 indirectly as a “taker” of liquidity from sell-side firms);
  - an algorithmic market maker;
- automated executors (use algorithms to execute clients' orders intelligently):

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<sup>8</sup> Selected for recency (published in 2023). Furthermore, the Netherlands is widely reported to be the UK's main rival as the European destination of choice for AT firms post-Brexit. Accordingly, Dutch regulatory initiatives pertaining to AT are likely to be highly influential in the UK and vice versa.

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- five brokerages active in transacting in a mixture of asset classes for a broad range of wholesale and, in some cases, retail, clients using electronic and traditional channels, for example, using voice telephony; and
- a retail brokerage (using online platforms).

As has been highlighted in earlier research into AT that seeks access to operational insiders, particularly Culley (2022) and MacKenzie (MacKenzie, 2018a) Obtaining that access is challenging. This also applies if a researcher seeks engagement from an extensive professional network, as in the author's case. Some invited to participate had advanced time constraints, concerns about confidentiality, and claims of insufficient knowledge.

### 5.4 Findings

This chapter's findings are structured to address specific AT-related requirements in RTS 6, where participants commented on these in enough detail.

#### 5.4.1 Role of the compliance function (Article 2, RTS 6)

Article 2(1) requires investment firms to ensure that the compliance personnel have, at a minimum, a "general understanding" of their AT operations. Additionally, compliance personnel must be in "continuous contact" with those persons within a firm who possess expert knowledge of its algorithms and related systems. A senior compliance professional appeared unconvinced that his firm had achieved compliance with Article 2(1):

*"I think knowledge is siloed now. And for the most part, I think that...very few people outside of the front office and developers would understand in basic terms what each algo did."*

#### **INTERVIEW WITH A SENIOR MANAGER #4 (2021N)**

Several professionals said their firm had tried to use the FCA recommendation to maintain a register of algorithms to improve understanding (2021f) (2021h) (2021s). Opinion was that these are only partially effective because keeping them in "layman's

terms...still requires a certain level of knowledge” (2021h) and “...perhaps sometimes [people] just take them for granted.” (2021s).

Another compliance professional who had spent time at several firms in senior roles before and after the implementation of MiFID II concurred with the sentiments of his counterpart, suggesting that “continuous contact” of the nature demanded by Article 2(1) may be counterproductive:

*“the compliance people are the second line of defence, and I don’t know if they’ll be good enough to catch...[what]...algorithms can do because most compliance people don’t come from an algorithmic trading background. So they’re only going to go what they’re told by the programmer, not really an independent sort of second line of defence check there.”*

(2021o)

To reduce reliance on other functions, this compliance professional sought to recruit directly from other areas of the business:

*“...clearly not everybody would make it on the trading floor. But it doesn’t mean to say they’re not very good at understanding what was going on. Maybe it wasn’t for them. So, I think almost the best sort of monitors would be from people who have done the underlying program and or done the underlying trading.[sic]”*

### **INTERVIEW WITH A SENIOR MANAGER #3 (2021o)**

Interviewees from other functions (for example, trading or operations) agreed, contending that oversight functions are “lagging behind” (2021a) front office functions which “would pull the wool over the eyes of compliance people...” (2021l). One even exhibited resistance to compliance staff being involved in the supervision of AT activities at all, exclaiming: “How closely do we want them [surveillance staff] involved in our trading activity?” (2021f). Compliance staff in smaller firms are inclined to agree since

they often struggle to manage competing priorities, such as complaints and financial promotions (2021i).

Article 2(2) requires that compliance functions be provided with either direct or indirect access to functionality used to “kill” or switch off unexecuted orders (see “kill functionality” below). Whereas numerous participants stated or intimated that their firms had a kill switch, the subject of access to it was not raised in the interviews. The exercise of kill functionality would probably be a delicate event due to the possible economic and reputational consequences for a firm and its customers. Therefore, this might suggest that neither the participants nor their firms have ever been in a live or test situation requiring exercise. Then again, it is possible that reputational concerns inhibited forthright discussion of this.

#### 5.4.2 Staffing (Article 3, RTS 6)

Article 3 RTS 6 stipulates that firms shall maintain adequate human resources to manage their AT operations. Article 3(1) states that staff must have “sufficient technical knowledge” of:

- (a) “the relevant trading systems and algorithms;”
- (b) “the monitoring and testing of such systems and algorithms;”
- (c) “the trading strategies that the investment firm deploys through its algorithmic trading systems and trading algorithms;” and
- (d) “the investment firm’s legal obligations.”

Apropos these obligations, one participant said that regulators should require that staff involved in the performance of algorithmic-related operation sit examinations:

*“I would be very keen to see exams come in pertinent to algorithmic trading and being able to monitor and stay on top of what's going on.”*

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### **INTERVIEW WITH A SENIOR MANAGER #3 (2021O)**

The FCA currently prescribes examinations for persons engaged in specific retail client-facing activities, such as providing investment advice. Such requirements do not, however, currently extend to wholesale trading activities.

In addition to, or instead of, requiring that persons supervising AT operations obtain specific qualifications, some firms seek to recruit expertise from their commercial ranks. An interviewee said:

*“I think the best sort of monitors would be from people who have done the underlying programming and or done the underlying trading....[accordingly] my natural inclination would be to sort these people from the trading floors or the programming floors. In other words, almost like a career path.”*

### **INTERVIEW WITH A SENIOR MANAGER #3 (2021O)**

A regulator charged with overseeing firms’ algorithmic practices said that he had been:

*“...advocating here that on every board of at least certainly the large brokers that we deal with that they should have ahead of it [algorithmic trading]. That is prominent in a position that sits on and understands those risks to the firm...So I've gotten a bit of pushback here about that, saying we should be pushing telecom firms about the makeup of their board, but I've been increasingly arguing that brokers are becoming I.T. companies.”*

### **INTERVIEW WITH A REGULATOR # 3 (2021D)**

On the ability to maintain knowledge of applicable legal obligations, a participant said:

*“I think the knowledge base within firms sometimes is not going at the same pace. And it's not because of anything, you know, it's a problem with the firm. It's just that the regulatory framework is constantly playing catch up to the new technology that's coming in.”*



**INTERVIEW WITH A SENIOR MANAGER #5 (2021Q)**

Another suggested that internal training programmes that seek to promote knowledge of applicable legal obligations should be broadened to include persons in non-revenue generating roles:

*“I think it's most likely to be borne out of a lack of understanding from the guys developing these algorithms as to what market abuse could look like. Traditionally, market abuse has been something that training programmes have focused very much on the front office and the guys that are developing these algorithms who have the potential to have a far greater impact on the market..”*

**INTERVIEW WITH A SENIOR MANAGER #4 (2021N)**

Too much or poorly focused educational initiatives risk “regulatory fatigue” and concomitant disengagement. One c-suite level senior manager insisted that tracking “continuing developments” in the AT arena:

*“may overburden the responsibilities of those people who are managing the business, and that in itself is potentially a risk...”*

**Interview with a Trade Surveillance Expert #2 (2021j)**

**5.4.3 IT outsourcing and procurement (Article 4, RTS 6)**

Article 4(1) clarifies that firms retain regulatory responsibility for any outsourcing or use of third-party vendor technology in the context of AT. This is a well-established principle of broader UK financial regulation, which probably explains the interviewees' lack of comment about Article 4(1).

Article 4(2) demands that firms know sufficiently about any outsourced or vendor-supplied AT solutions they procure. This is relevant to most investment firms because, unlike “tier one investment banks”, they often lack the resources to develop AT systems themselves:

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*“Well... we would love...not [to] outsource, but we would look to third parties to provide the technology predominantly because of the development resource there would need to go into developing a suitable system or framework.”*

### **INTERVIEW WITH A SENIOR MANAGER #4 (2021N)**

Investment firms’ reliance on external vendors poses opportunities and challenges. Efficiency was cited as a significant advantage of this model (2021q). One participant averred:

*“I just think it's more efficient for a technology vendor to roll out one change process for a change in regulation that...100 clients can benefit from than it is for those 100 clients each to replicate that effort.”*

### **INTERVIEW WITH A SENIOR MANAGER #4 (2021N)**

Conversely, an alleged consolidation of vendors is putting pressure on firms’ budgets:

*“Costs are spiralling upwards from just because they are...[dependent upon]...the same sort of single actor...you know, it's the guys who sell the shovels and make money during managing the gold rush. I think [we're] in that scary space where there's only a few vendors left in the industry because they've acquired everyone else who dominated. [sic]”*

### **INTERVIEW WITH A SENIOR MANAGER #1 (2021M)**

Such cost pressures may encourage some firms to become too dependent on the knowledge and expertise of their AT-related system vendors, particularly if they have smaller financial or non-financial resources.

It is common for UK investment firms to be controlled by foreign actors in international conglomerates. One interviewee implied that this poses a challenge to ensuring compliance with obligations such as those enshrined in Article 4(2):

*“...where I'm working now [we] are highly dependent on decisions coming from outside the UK and from a regulatory environment that are completely different from the UK...in this particular case, it is the US...Any decisions that relate to [procuring] new I.T. or to get new suppliers are made at group level. [sic]”*

**INTERVIEW WITH A SENIOR MANAGER #2 (2021N)**

**5.4.4 Testing, deployment and review of AT systems and strategies (Sections I-2, RTS 6)**

Section I of RTS 6 sets out detailed requirements for developing and testing algorithms, AT systems and strategies (together “AT systems”). To summarise, these include:

- **oversight:** designating a senior manager as being responsible for authorising the deployment or substantial update of an AT system and ensuring the appropriate allocation of responsibilities for performing the processes outlined in Section I;
- **recordkeeping:** ensuring the firm’s AT launch and change management processes are fully documented;
- **conformance testing:** to minimise the risks of flawed interaction, testing the conformance of AT systems with the systems of a relevant trading venue, for example, in the case of initial deployment or material updates;
- **using dedicated testing environments** to conduct pre-production testing and
- **setting pre-defined limits** on the “number of financial instruments being traded,” “price, value, and numbers of orders,” “strategy positions”, and “number of trading venues to which orders are sent.”

The core objective of Section I's requirement is to reduce the risk of errant AT contributing to disorderly market conditions.

According to Section 2, post-deployment management is comprised of three components:

- (1) **annual self-assessment and validation** (Article 9) of a firm's compliance with RTS 6 and AT systems and strategies;
- (2) **stress testing** (Article 10): of AT systems and controls under simulated conditions of stress or increased order traffic; and
- (3) **Management of material changes (Article 11)**: to ensure robust review before release into production.

Several interviewees spoke of their firms' interaction with the "normally...quite prescriptive conformance testing" (2021y) operated by trading venues. Participants commented on the limitations of strict conformance testing when a firm scrutinises their clients' AT systems. These limitations include (i) limited visibility because clients are protective of their intellectual property and (ii) an inability to scrutinise vast amounts of code (2021m) carefully. One critic of conformance testing went further to argue that it was encouraging the surveillance departments of exchanges to become fixated on process failures at the expense of pursuing actual market abuse:

*"I'm just thinking the exchanges...if they do take action against... an algorithm, it tends to be because it's placing too many orders or that someone tested an algorithm in live, that type of issue, as opposed to a genuine "for six months we saw this complete abuse".[sic]"*

### **INTERVIEW WITH A SENIOR MANAGER #3 (2021o)**

Another postulated that mandatory conformance tests could encourage an unthinking approach to risk management:

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*“You've almost got to...do a technical KYC (Know Your Customer) on each client from that perspective and even each algorithm...You can't just say we adhere to the venue conformance testing...that would just tick boxes. We have our own conformance testing to a much higher level. [sic]”*

### **INTERVIEW WITH A SENIOR MANAGER #2 (2021F)**

To this end, several participants stated that their firms operated exacting processes to understand algorithms before sign-off and deployment. Carefully managing the relationship with vendors (2021f) involves testing, taking the following factors into account:

- the proposed strategy and, if relevant, a client’s objectives;
- the potential impact on the market, particularly from a conduct perspective; and
- in the event of proposed changes to existing algorithms, whether these are material and, if so, would necessitate (a) additional stress testing; and (b) the submission of prior notification to relevant trading venues. Even apparently minor changes to an algorithm require scrutiny because they could alter how a trader interacts with them (2021h) (2021o) (2021s).

Others were less certain about their firms’ systems and controls. One blamed a “lack of understanding of the regulations” for undermining efforts to comply:

*“...I think one month before going live [3<sup>rd</sup> January 2018], basically they hired a consultancy firm and asked [them] to just do the minimum requirements that were needed...[sic].”*

### **INTERVIEW WITH A SENIOR MANAGER #2 (2021N)**

Complexity was mentioned as a factor that can frustrate recordkeeping efforts:

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*“...a lot of [machine learning] decisions [are] so complex [that] they're very difficult to track and...they don't have a very clear audit trail...”*

### **INTERVIEW WITH AN ALGORITHMIC TRADING EXPERT (2021AB)**

An inability to read code could limit the usefulness of reviews performed by control functions. However, this weakness may eventually disappear as personnel become more technically proficient:

*“I've been heavily involved in algorithmic compliance for a lot of my career, but I can't read code. So let's be completely straight: [one can only be so useful]...when you're trying to attest to the conduct of your algorithm...it's probably a good thing that you're seeing a lot more people who enter into the market now with Python experience...so you're going to get more people in control functions with that [experience]...[sic].”*

### **INTERVIEW WITH A SENIOR MANAGER #7 (2021S)**

Despite these impediments, interviewees could not recall any incidents emanating from a failure of pre-deployment controls:

*“I don't think of any significant conduct issues that have [arisen because] an algorithm has been mishandled or poorly signed off.”*

### **INTERVIEW WITH A SENIOR MANAGER #7 (2021S)**

One interviewee said the deployment processes were integrated with his firm's operational risk framework. This setup allows his firm to (a) identify the root causes of any issues arising and (b) learn from them to make refinements (2021i).

The annual self-assessment and validation process was not thought to “represent a significantly greater constraint than any other particular regulation” by a regulator interviewed for this study (2021c). However, a consultant who specialises in assisting firms to achieve compliance with AT obligations claimed to have witnessed significant differences between the expectations and approaches of an overseas regulator (the US Securities and Exchange Commission (“SEC”)) and the FCA to annual reviews. One example he gave was a greater focus of the SEC on the potentially toxic interactions of algorithms (2021a). The implication was that, by contrast, audits in the UK tend to be more process-focused, for example, examining undertaken monitoring or whether elements of an AT programme have been “signed off” properly (2021i).

#### 5.4.4 Kill functionality (Article 12, RTS 6)

As outlined in subsection (i), several interviewees declared their firms have a “kill switch” to stop trading that could bring the market “into disrepute” (2021j) (2021a) (2021l).

Based on some interviewees' responses, the form “kill functionality” takes between firms appears to vary. For some, a “kill switch” is a chain of direct human intervention:

*“You know, in terms of intervening...if there were any disorderly markets...on the investment side, I've seen the...industry...move towards...not using [the] kill switch as a last resort, but actually more...human intervention early on.[sic]”*

#### **INTERVIEW WITH AN ALGORITHMIC TRADING EXPERT (2021AB)**

For others, the “kill switch” is either integrated with the automated trading process (2021ab) or non-existent:

*“I don't need to worry about this [because] we're not dealing on our own account.... So... we don't have a kill switch per se...”*

#### **INTERVIEW WITH A SENIOR MANAGER #9 (2021S)**

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The lack of a significant AT-related “event” during the volatile period triggered by the world’s response to the COVID-19 pandemic could be fuelling complacency. An expert in trade surveillance mused whether kill switches were still relevant:

*“...if you think about some of the really noxious things that we’ve seen in the last couple of years...with regards to the pandemic...you’re still not seeing the kind of spikes that [causes] flash crashes that we used to see back in the early noughties. Again, [it’s] mainly because a lot of these [algorithms] are now better coded...they know when to pull out of the market or...they’ve got kill switch....I don’t know. It’s just a personal feeling. You just feel like you see less of this stuff at the moment than you have done in the past. [sic]”*

### **INTERVIEW WITH A TRADE SURVEILLANCE EXPERT #1 (2021AA)**

A regulator who was heavily involved in the supervision of AT firms was asked if he could ever envisage the FCA taking over responsibility for activating a “kill switch” given the potential inconsistencies in firms’ approaches:

*“...it’s [firms’ maintenance of a kill switch] never going to be quite as good as a regulator because...we get in theory...the whole view...we can get across on different exchanges and get some asset classes, whereas they [firms and trading venues] can’t. But I think it’s a long way off before regulators got a kill switch...I don’t honestly believe [we] would see it that quickly...to be able to react to it.”*

### **INTERVIEW WITH A REGULATOR #1 (2021G)**



**5.4.5 Automated surveillance system to detect market manipulation (Article 13, RTS 6)**

Investment firms are required by Article 13 to establish and maintain an automated surveillance system to monitor orders and transactions submitted through their trading systems for potential indications of market abuse. The system must be appropriate to the size, nature and scale of a firm's trading activities and current regulatory obligations. Alerts generated by the system must be generated on a trading day plus one ("T+1") basis. Firms must calibrate their surveillance systems to minimise the generation of false positives or negatives. Calibration should also compare the completeness of trade and account information, particularly when reconciled with the records of trading venues, clearing houses and other key counterparties.

Automated surveillance systems pair a firm's trading activities with externally sourced market data. An alert is generated if the system detects a divergence, or suspicious relationship, between the firm's activities and those on the broader market. However, firms regularly protest that market data is too expensive (2022k). Trading venues allegedly "abuse" their privileged position to charge high fees. Faced with high costs and diminishing returns, investment firms are tempted to invest the bare minimum in non-revenue generating systems and controls:

*"When you are a brokerage firm and you see the license prices, they have to pay for all the data that's going to go through, which is not your own data. This is the data from outside, uh, from the outside world. Basically, the majority of the time, they try to cut corners as much as possible [sic]."*

**INTERVIEW WITH A SENIOR MANAGER #12 (2021T)**

Regulators insist that firms calibrate surveillance tools to meet the challenges their specific business models pose. The costs and difficulty of procuring bespoke systems

(2021d) encourage firms to implement sub-optimal solutions. This is especially the case as algorithms based on AI increase in popularity:

*“I haven't seen many tests that are up to that point [monitoring AI powered algorithms] yet... [although] that doesn't mean that they are missing transactions in any way”*

**INTERVIEW WITH A SURVEILLANCE EXPERT AT A VENDOR (2021z)**

**5.4.6 Real time monitoring (Article 16, RTS 6)**

Article 16 mandates that an investment firm routing orders to trading venues monitors all trading activity “under its trading code” for indications of “disorderly trading”. This obligation extends to the activities of an investment firm’s clients that utilise a firm’s trading code. Article 16 requires the monitoring to be performed both at desk level and by an independent risk control function. The system used to perform the monitoring must produce alerts within five seconds of detecting potentially disorderly trading.

Participants were unconvinced about the usefulness of real-time monitoring. One trade surveillance professional at a software vendor that supplies investment firms said:

*“Yeah, we support real-time...I prefer T+1 [monitoring] myself because...you're able to analyse the data [before] the event as well...So... if I was looking at something like a price ramping alerts, I may want to look at what happened to the price in the instrument after the price and event had taken place....whereas, with real-time, I find that you just [what is there] at that time....? [sic]”*

**INTERVIEW WITH A SURVEILLANCE EXPERT AT A VENDOR (2021z)**

He continued:

*“There are some, there are some clients that take the real time, but it seems as though they use the real time for different uses, a more*

*transaction monitoring, position monitoring and certain things like that, rather than the traditional surveillance T plus one surveillance monitoring.”*

**INTERVIEW WITH A SURVEILLANCE EXPERT AT A VENDOR (2021Z)**

Another inferred that his firm had developed basic functionality to meet the requirement:

*“We have both... real-time surveillance, we have an in-house system, and that only looks at the rapid increase in older activity, so that's quite a crude surveillance tool, I would say.”*

**INTERVIEW WITH A SENIOR MANAGER #4 (2021N)**

A very experienced trade surveillance professional could not foresee his duties expanding to include real-time monitoring duties anytime soon:

*“We look at patterns and exceptions after the event, not in real time. So that would be a fundamental change in the responsibility of a compliance function if that were to be a real time surveillance process as well. And therefore push back to the business to say you need to look at the impact in real time.”*

**INTERVIEW WITH A SENIOR MANAGER #10 (2021G)**

The lack of fully-fledged real-time monitoring functionality did not pose a concern to the (generally) confident professionals interviewed for the study (2021i). Still, one did confess that his firm had:

*“...deliberately slow[ed] down some algo[s] specifically, so they wouldn't be subject to some of the more onerous requirements...”*

**INTERVIEW WITH A SENIOR MANAGER #2 (2021L)**

#### 5.4.7 Pre and post trade controls (Articles 15 and 17, RTS 6)

Article 15 makes the imposition of the following pre-trade controls mandatory upon order entry:

- **price collars:** to automatically block orders for prices outside specified parameters;
- **maximum order values and volumes:** to prevent the transmission of orders of uncharacteristically large size;
- **order execution throttles:** over the number of times an AT strategy has been applied. Once a pre-defined limit is reached, the strategy is automatically disabled until re-established by a human after an examination; and
- **market and credit risk limits.**

Article 17 dictates that investment firms continuously operate post-trade controls. Central to this requirement is the monitoring of credit risk and market risk. Again, traders and risk managers are expected to operate post-trade controls simultaneously, with appropriate action taken if one of the controls is triggered. For example, this could include recalibrating or withdrawing the algorithm in question.

The requirements of Articles 15 and 17 drew little comment from participants. There are a range of potential explanations for this. First, monitoring levels of credit and market risk is well established in the investment sector, with one participant stating hyperbolically that professionals have been considering these “for thousands of years” (2021s). Second, this could indicate that price collars, throttles and maximum order values are set so generously that they have caused little friction. Third, AT has fallen down the regulator’s list of priorities, causing firms to “set and forget” trading parameters. A regulator who had recently left the FCA at the time of being interviewed supposed:

*“There will be some sort of flash crash or issue involving an algorithm, and that will prompt the regulator to suddenly start working in this space again. But I doubt it will do anything.”*

**INTERVIEW WITH A REGULATOR #1 (2021G)**

A senior sales and trading professional did opine that pre-trade controls are too focused on latency to the potential detriment of other risk factors:

*“...everything is about messages per second, everything is about what happens in price movements....that doesn't necessarily tell you ...what.. the underlying aim of the strategy [is].”*

**INTERVIEW WITH A SENIOR METALS SALES AND TRADING PROFESSIONAL (2021Y)**

## 5.5 Discussion

The implementation of RTS 6 formalised the position of sell-side investment firms as “gatekeepers” in the conduct of AT on EU and UK trading venues (Čuk and Van Waeyenberge, 2018). Concerns in the literature about the potential impact of resultant costs on firms’ implementation are supported by the findings of this study (Čuk and Van Waeyenberge, 2018). Anxieties about market data charges and the availability of specialist headcount may encourage firms to “cut corners” in their AT control programmes. As forecasted by Conac (2017), some may even exit the market completely:

*“Excessive regulatory obligations...is that going to drive people away from this type of business? I think there is a possibility that shareholders...are going to feel, you know what? The returns are not really worth the risk. [sic]”*

**INTERVIEW WITH A SENIOR MANAGER #6 (2021P)**

The findings of this chapter have several implications. Practically, firms can use them to benchmark their progress in implementing the requirements in RTS 6. In its letter to the Chief Executives of Principal Trading Firms dated 4<sup>th</sup> August 2023 (2023j), the FCA stated that it would conduct “a review of firms’ compliance with MiFID RTS 6 requirements governing algorithmic trading controls...Where material weaknesses and non-compliance are identified, we will act to ensure risks are mitigated.” With enforcement action a real prospect, firms cannot afford to let regulatory fatigue, overreliance on third parties or performative compliance make them potential outliers.

From a theoretical perspective, the findings support some of the arguments advanced by behavioural economists. Faced with competing demands on their time (Kahneman, 2011), practitioners have been incentivised to take shortcuts in implementing some elements of RTS6, such as real-time surveillance. Similarly, some pre-and post-trade risk limits may have been set generously to avoid friction. The FCA might respond to this apparent gaming of its rules by invoking Principles 2 (skill, care and due diligence) and 3 (management and control) of its Principles for Business (2023k). An overcorrection could encourage some market participants to engage in regulatory arbitrage. Indeed, some have already claimed that compliance's financial and temporal costs are too high. If jobs and taxable revenue move offshore, this could have broader societal and economic impacts.

Considering these implications, this Chapter makes three recommendations that policymakers could adopt to address existing weaknesses while introducing greater proportionality.

### **5.5.1 Policy proposal one: introduce mandatory AT qualification requirements for key staff**

Echoing the concerns expressed by Sadaf et al. (2021) and Coombs (2016), there are indicators that the desire to control expenditure is encouraging firms to over-rely on trade platform vendors to calibrate AT-related parameters and perform testing. However, this “de facto” outsourcing seems to continue in the near term. However, professionals with advanced coding skills are gradually entering the ranks of firms’ control functions because of natural demographic change. Building upon SMCR, regulators could seek to accelerate this change by mandating that staff in AT deployment possess related qualifications. The University of Oxford has already launched an AT short course aimed at professionals (2023i). If the FCA mandated training, other professional course providers would enter the market.

Introducing mandatory training would also help to alleviate the inherent operational resilience risks posed by firms relying on their vendors (2020n). Furthermore, mandatory training would reduce the risks posed by international groups. The Threshold Conditions

require that the “mind and management” of an FCA-regulated investment firm is based in the UK (2022s). Despite this, overseas staff with limited knowledge of the UK regulatory system in international groups are liable to make critical decisions.

### **5.5.2 Policy proposal two: lessen the requirements in RTS6 for automated executors**

Faced with skills shortages and cost pressures, firms may be tempted to take a “tick box” approach to fulfilling the requirements in RTS 6 if they are not perceived as helpful. The “creative interpretation” that has hitherto characterised the implementation of AT-related initiatives is at risk of causing fatigue. Some aspects of the RTS 6 regime, such as conducting annual assessments and compiling algorithm inventories, are not considered particularly burdensome. Nevertheless, they could reduce AT compliance to a preoccupation with the process, especially where firms face competing priorities. Regulators could build upon the *Wholesale Markets Review* to examine where some of the requirements in RTS 6 could be lessened, especially for firms that do not support the deployment of trading or machine learning algorithms. This would be conducive to a more outcomes-focused approach to compliance.

### **5.5.3 Policy proposal three: introduce a Recognised Software Vendor (“RSV”) regime**

An alternative, or supplement, to refining the mandatory requirements on AT firms enshrined in RTS 6 would be to accept that reliance on third-party vendors is inevitable and perhaps even desirable. In doing so, policymakers could expand the notion of “critical third parties” (“CTPs”) in the context of AT to capture a broader array of technological infrastructure providers. Currently, UK regulators forecast that:

*“...certain third parties providing data and artificial intelligence (“AI”) or machine learning (“ML”) models could emerge as future potential CTPs as a result of the increasing use of these data and models in trading systems, which could in turn lead to herding or procyclical behaviours”*

#### **BANK OF ENGLAND (2022E)**

The mitigation of systemic risk posed by CTPs is a core aim of the UK Financial Services and Markets Bill, which is progressing through Parliament at the time of writing. Yet, expanding the concept of “TechReg” (Apfelbacher and Jasmina, 2019) by regulating vendors directly could offer additional benefits. After all, data-hungry AI models will likely be out of reach for most sell-side brokerage firms for the foreseeable future due to the same cost and expertise constraints that drive them to rely on their vendors. Besides, firms with the financial and technical firepower necessary to develop the types of AI-based AT operations described by Azzutti et al. (Azzutti et al., 2021) are anticipated to shrink their staffing levels as a consequence (Kelly, 2021). For these reasons, it is recommended that UK policymakers consider expanding Part XVIII of the Financial Services and Markets Act 2000 (“FSMA”) to include a new type of recognised body: the Recognised Software Vendor (“RSV”).

Currently, Part XVIII makes provision for the recognition of the following types of market infrastructure providers:

- Recognised Investment Exchanges (“RIEs”), for example the London Stock Exchange;



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- Recognised Clearing Houses (“RCHs”), for example LME Clear Limited; and
- Recognised Central Securities Depositories (“CSDs”), such as Euroclear UK and International Limited.

By obtaining recognition, an RIE, RCH, or CSD is exempt from having to obtain permission from either the FCA or Prudential Regulation Authority (“PRA”) to conduct regulated activities in the UK (2022e). Nonetheless, to become recognised, an aspiring RIE, RCH or CSD must be able to demonstrate that it meets exacting governance, financial resource, and system and control requirements as set out in the Financial Services and Markets Act 2000 (Recognition Requirements for Investment Exchanges and Clearing Houses) Regulations 2001 (SI 2001/995). For example, in the context of AT, rule 2.5 of the FCA’s RIE Sourcebook (“REC”) (2022g) implements RTS 7 by requiring RIEs to:

- take measures to ensure AT systems deployed by market participants do not create or contribute to disorderly trading conditions;
- ensure their trading systems are resilient to cope with high message volumes and market stress; and
- ensure orders generated by AT are flagged for ease of identification.

Adopting parts of the Part XVIII FSMA 2000 and RTS 6 frameworks, conditions for becoming and remaining an RSV could include:

- **stress testing algorithms that an RSV has incorporated into its trading platform software:** using aggregated historical market data crowdsourced from all its investment firm clients, an RSV could perhaps achieve more meaningful testing than if those firms were acting by themselves;

- **organising coordinated “market-wide” kill functionality simulations** with investment firm clients based on this data;
- **procuring periodic external assurance reviews and technical certifications as a “single source”**, reducing the scope for duplication and “performative” compliance by investment firms that lack the know-how to do this effectively;
- **the “single source” maintenance of trading algorithm inventories:** moving this to an RSV from individual investment firms would help reduce duplication. This would enable a regulator to focus its limited resources on scrutinising fewer, higher-quality inventories as part of a periodic RSV audit programme; and
- **being included in the proposed extension of SMCR to other market infrastructure providers (2023c):** like RIEs, RSVs would be freed from the incentive structures often accused of encouraging investment firms and their staff to take excessive risks. This, together with an extension of SMCR’s accountability requirements to RSVs, would ensure that technology companies have “skin in the regulatory game”. This should help motivate staff employed by RSVs to use their expertise responsibly.

Whilst introducing an RSV regime should complement a more proportionate application of RTS 6, it is acknowledged that complete reliance on third-party vendors would not be suitable for all firms engaged in AT. This would mainly be the case for automated traders deploying proprietary algorithms. If an RSV regime were implemented, regulators should have additional capacity to focus on business models with the highest risks. It is also acknowledged that UK trading venues require trading platforms developed by non-member, third-party software vendors to be tested for conformance to their requirements before live deployment (or following a material change). However, such conformance testing is relatively limited in scope (Azzutti, 2023), even if some participants felt it was very prescriptive. For an example, see *LMEselect and LMEsmart Testing Services* (2020a).

An obvious drawback of introducing an RSV regime is that it would increase software vendor costs. Compliance and risk management personnel would need to be recruited to implement the requirements of the new regime. Existing software may also need to be adapted, although significant changes would probably not be necessary. This is because an RSV regime would enhance the operation of RTS 6 rather than replace it. For example, investment firms would still monitor their trading activity to ensure compliance with the UK MAR. In addition, investment firms would work with vendors to test algorithms. Idiosyncrasies in a firm's specific operating environment or demands for a custom-built algorithm would necessitate the supply of firm-specific simulated trade data. Even so, vendors would probably pass any additional costs on to firms using their platforms.

The regulatory treatment for more deterministic (and controllable) systems could be lessened to limit the burden on firms and RSVs deploying AI trading applications. Conversely, ML-based trading raises several additional uncertainties that require greater regulatory scrutiny. For example, an RSV might coordinate market-wide kill functionality simulations for ML-based algorithms more regularly than would be the case for deterministic algorithms.

#### **5.5.4 Limitation and opportunity for further research**

Finally, the lack of comment on the effectiveness of some pre-and post-trade controls required by RTS 6 represents a limitation of this study's findings. This could indicate that these requirements are not controversial. Firms may have implemented such controls before the promulgation of RTS 6. Alternatively, parameters may have been set so generously that they cause little noticeable friction in daily operations. One can only speculate. Therefore, an opportunity exists for future researchers to probe this further.

## 5.6 Conclusion

Some might argue that the lack of a notable AT-related event during the highly volatile periods spurred by COVID-19 and the Russo-Ukrainian War is a testament to the effectiveness of firms' implementation of RTS 6. Others may ascribe the lack of incident to luck, particularly given that, to date, no major AT-related events have reportedly occurred outside the UK or the EU either. The evidence presented in this chapter offers some support for both perspectives.

On the one hand, the professionals interviewed for this chapter clearly understood the requirements of RTS 6. They ascribed value to them. On the other hand, this does not necessarily translate into adequate controls. Practitioners should pay particular attention to (1) a lack of knowledge of the algorithms, code and strategies that are the subject of RTS 6, (2) regulatory fatigue, (3) a temptation to cut corners in an era of rising costs and squeezed returns; (4) overreliance on platform vendors; (5) governance in international groups; (6) the deliberate calibration of risk parameters to reduce friction; and (7) complacency arising from a lack of incident. In a follow-up to the *Wholesale Markets Review*, policymakers could consider targeted refinements to the existing rules and introducing an RSV regime to reduce process and focus oversight on riskier AT models. As well as increasing firms' focus on outcomes, such a move could persuade firms with tighter budgets to stay in the market. A loss of smaller investment firms would increase concentration and liquidity risk and, in turn, amplify the risk posed by poor conduct.

## **Chapter 6 Does the deployment of algorithms combined with direct electronic access increase conduct risk? Evidence from the LME.**

### **6.1 Introduction**

*"...we are seeing new complexities emerge around issues like disintermediation.*

*...a split from the principal/agent model that's underpinned monetary transactions for most of human history."*

**(WHEATLEY, 2015)**

These sentiments, expressed by Martin Wheatley, then Chief Executive Officer of the UK Financial Conduct Authority ("FCA"), in response to retail developments, would also inform regulatory initiatives concerning the proliferation of algorithmic trading and direct electronic access in the wholesale markets.

In *Algorithmic Trading Compliance in the Wholesale Markets* (2018b), from now on "Algorithmic Trading Compliance", the FCA differentiated between two forms of algorithmic deployment, borrowing heavily from Commission Delegated Regulation 2017/589 ("CDR 2017/589") to the second Markets in Financial Instruments Directive ("MiFID II"):

- i) investment decision or "trading" algorithms: "make automated trading decisions by determining which financial instrument should be purchased or sold"; and
- ii) order execution algorithms: "optimise order-execution processes by automatic generation and submission of orders or quotes to one or several trading venues once the investment decision has been taken".

Many market participants rely on DEA to deploy their algorithms. This is because they are not themselves members of a trading venue such as the London Metal Exchange ("LME"). DEA is defined in MiFID II as:

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*“an arrangement where a member or participant or client of a trading venue permits a person to use its trading code so the person can electronically transmit orders relating to a financial instrument directly to the trading venue.”*

### **ARTICLE 4(1)(41) MiFID II (2014b)**

*Algorithmic Trading Compliance* encouraged firms to “identify and reduce potential conduct risks created by their algorithmic trading strategies”. *Culture Audit in Financial Services: Reporting on Behaviour to Conduct Regulators* (Miles, 2021b) offers the following definition of conduct risk:

“Subset of behavioural risk: potential cost resulting from employees or suppliers breaching conduct rules; or more generally, business loss following staff or supplier behaviour (especially towards customers) that undermines trust or value in the business or creates a ‘disorderly market’. Includes managers’ inaction failing to anticipate and overcome biases or asymmetry in transactions” (2021ah, 2021c, Hotter, 2021b, Hotter, 2021c, Hotter, 2021a, Culley, 2020a).

Taking a qualitative approach, this chapter seeks to draw conclusions about the effectiveness of regulatory initiatives such as *Algorithmic Trading Compliance* and CDR 2017/689 in addressing potential conduct risks arising from the deployment of algorithms and DEA by broker-dealers from the analysis of 15 explorative semi-structured interviews held with experts in trading at the LME.

The rest of this chapter is structured as follows. First, a literature review surveys the conduct risks that are typically associated with the deployment of algorithms and trading. Besides, an overview of the UK/EU regulatory framework currently in place to govern algorithmic trading is provided. Next, details of the study’s methodology and findings are set out. After that, the significance of the findings is discussed. Recommendations for policy improvements and further research are also made in this section. Finally, the chapter concludes with a summary of the chapter’s insights and their implications for future regulatory practice.

## 6.2 Chapter specific literature review

The potential conduct implications of trading algorithms were propelled into the consciousness of regulators in the aftermath of the 2010 Flash Crash (Busch, 2016). Four types of risk have been identified in the ensuing debates about algorithmic conduct (Culley, 2020a). These include (i) manipulation, (ii) structural, (iii) imitative, and (iv) hybrid.

Manipulative conduct involves the deployment of deliberately abusive strategies, which include quote stuffing, layering, spoofing, front running and momentum ignition (Fisher et al., 2015). Quote stuffing has been described as a type of financial “denial-of-service attack”, whereby the perpetrator floods the central limit order book (“CLOB”) with many orders to slow down other market participants (Jared et al., 2016). Layering and spoofing is the practice of placing orders without the intention of executing them (Wellman and Rajan, 2017). Momentum ignition seeks to draw other market participants to rapidly increase their activity on the CLOB so the perpetrator can exit their trades at more advantageous prices (Friederich, 2012). Front running occurs when a high-speed trader detects another market participant has placed a large order. Seeking to benefit from the upcoming price movement, the trader uses his speed advantage to place an order before the large order. The trader can then fill the large order at a price that is favourable to him but which is likely to be detrimental to the other market participant (Scopino, 2015). Front running has proved particularly controversial because it is not necessarily illegal, provided that the trader has not misused confidential information in executing his strategy (Cooper et al., 2017).

Structural conduct risk arises when an algorithmic trader exploits a design flaw, anachronism, or other market infrastructure vulnerability to his advantage (Culley, 2020a). The behaviour is not necessarily illegal but could be ethically questionable (Miles, 2017). For example, an “arms race” whereby traders continually enhance their capability to trade at high speeds is not lawful but pressurises other market participants to divert resources away from fundamental research activities that are arguably more socially useful (Budish et al., 2015). Similarly, using a technological advantage to “pick off” the

stale quotes of slower market participants (MacKenzie, 2018a) has long been a feature of financial markets. If left unaddressed, these issues and poorly conceived incentive structures to attract algorithmic disruptors can result in liquidity flight (Yadav, 2016).

In terms of imitative risks, herding results from algorithmic traders following each other's signals (Stoll, 2014). This type of conduct can choke liquidity. Furthermore, in an unstable market, herding often results in feedback loops that exacerbate volatility and trigger a crash (Borch, 2016).

Hybrid conduct risks can materialise when trading algorithms interact with other technologies. During the so-called 'Hack crash' (23<sup>rd</sup> April 2013), the Dow Jones Industrial Average plunged 143.5 points after algorithms reacted to false reports of a terrorist attack at the White House that had been posted on the Associated Press Twitter account after hackers had compromised it (Karppi and Crawford, 2016).

Critical to the development of entirely "synthetic markets" and, by extension, the growth of algorithmic conduct risks is the supply of DEA to a trading venue (Seddon, 2020). Synthetic markets are characterised by high algorithmic participation and low levels of intermediation (Seddon, 2020). Originating in the equities markets, DEA spread to highly liquid futures markets such as those operated by the Chicago Mercantile Exchange ("CME") in the early 2000s (Maguire, 2006). Brokers were initially slow to offer advanced algorithmic functionality to their DEA clients (Maguire, 2006). Furthermore, buy-side demand for custom-built algorithms that could be deployed on DEA connectivity was also low (Maguire, 2006). Automated trading has seen rapid growth in the base metals markets recently. 70% of base metals trades made at the CME between 1<sup>st</sup> November 2016 – 31<sup>st</sup> October 2018 were derived from automated means (Haynes and Roberts, 2019). Likewise, the LME Select application programming interface ("API"), which allows LME members and, indirectly, their clients to deploy their trading platforms to the LME's CLOB, is very attractive, according to press reports (Hack, 2014). A chief concern with DEA is that the broker cedes some control over trading to clients (Callcott and Foley, 2011), potentially amplifying the conduct risks associated with algorithmic trading (Harrison, 2010).



Regulators in the European Union attempted to mitigate the inherent risks of combined algorithmic trading and DEA in MiFID II (Busch, 2016).

In terms of deterring manipulative conduct, MiFID II adopts what Seyfert (2021) terms is a “behaviouristic” or “outcomes-based” approach to regulating algorithmic trading. The regulation does not seek to interpret the *intentions* behind an algorithm’s conduct. This would be too challenging for regulators, most of whom are not computer scientists, posits Seyfert. Instead, emphasis is placed on the impact of conduct on the CLOB. Firms are required to tag algorithmic trades in transaction reports that are received by regulators and used to detect market abuse<sup>9</sup>. This permits a more detailed retrospective examination if required. However, Čuk and Van Waeyenberge (2018) are critical of this approach, claiming that it will likely cause confusion. In MiFID II, those responsible for designing and deploying algorithms will likely arrive at differing interpretations of manipulative conduct.

MiFID II also attempts to address perceived structural weaknesses in European markets that were believed to make them susceptible to algorithmic predation. The first Markets in Financial Instruments Directive (“MiFID I”) allegedly encouraged the growth of algorithmic trading by giving birth to new trading venues to challenge traditional exchanges (Lenglet, 2021) (MacKenzie, 2021a). Conversely, MiFID II seeks to exert control over algorithmic actors. First, firms employing high-frequency trading techniques must seek authorisation, even if they only trade for their own account (Sheridan, 2017). Second, trading venues must offer to house participants’ computers next to their own<sup>10</sup> on a non-discriminatory and transparent basis (2017j). Third, trading venues and firms must enact a range of pre-trade controls such as throttles (“maximum number of order entries/updates sent...per second”) (Linton, 2012). Fourth, firms must implement a “kill switch” to terminate resting orders if necessary (Schulte, 2018). Both controls can assist in counteracting imitative and hybrid algorithmic conduct risk. Fifth, firms must perform post-trade data reconciliations (Busch, 2016). Sixth, the abovementioned controls must

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<sup>9</sup> Known in the EU and UK as “MiFIR transaction reporting”.

<sup>10</sup> See the definition of “co-location”.

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sit within a comprehensive governance framework, including documented audit trails, formal sign-offs, and training. Finally, regulators had new powers to request information (Azzutti et al., 2021). This includes seeking a description of strategies, systems, and controls and ascertaining the knowledge and understanding of control functions.

Regarding DEA, MiFID II requires intermediaries to implement several control requirements. These include conducting (a) due diligence on prospective DEA clients to determine their suitability to receive DEA and (b) monitoring the DEA clients' activities to detect conduct that could amount to market abuse or otherwise be disorderly or breach the rules of a trading venue (Busch, 2016).

Critics of the MiFID II package have cited the increased costs and administrative burdens as potentially raising barriers to entry (Yeoh, 2019). This is particularly the case where manually calibrated execution algorithms are concerned. This is because, it is argued, manual algorithmic trading is losing ground in the machine learning era (Pereira, 2020). This has led some market participants to recently demand reforms to relax the burden on entities that only deploy execution algorithms (2021aj). Indeed, lobbying of this nature has helped shape the reforms of regulations and trading venues that contributed to the birth of algorithmic trading.

Zaloom (2006) explores how the transition from trading pits to screens reshaping reshapes the dealing floor. Set in the dot.com era, Zaloom found the "violent hypermasculinity" that predominated in the pits at the Chicago Board of Trade ("CBOT") was being displaced by the quiet solitude of office-based trading. Intermediation continued to predominate, but the early stages of electronification created opportunities for a new breed of intellectual trader to challenge the "alpha male", socially conservative orthodoxy (Miranti, 2007).

MacKenzie (2015) studied CME's introduction and expansion of its electronic trading platform, Globex, in the 1990s and early 2000s. Globex was initially very restricted during pit hours at the behest of incumbent floor dealers. Facing growing competition from Europe, such as Eurex, the CME's membership voted to lift the operating restrictions on

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Globex in 1999, precipitating the gradual decline of the pits. Concerns about the raucous behaviour of pit traders started to be displaced by spoofing fears in the new era (2021a).

Like MacKenzie, Seddon (2020) charts the conflict that accompanied the LME's launch and development of its electronic trading platform, LME Select, from 2001 to late 2018. Merchants assert that the LME is not comparable to US markets like the CME. As a servant of physical interests, the LME lists "futures with forward features" to facilitate customisation (2020j)The LME has sought to maintain its links to physical trade while innovating to compete with the likes of the CME for new sources of liquidity. Paradoxically, this has involved building further iterations of LME Select to accommodate HFT firms' preferences while curtailing incentive programmes designed to attract them.

While the findings of Zaloom, MacKenzie, and Seddon have implications for conduct risk, the core focus of these works is the sociology and politics of change.

In a critique, Smith (2007) Zaloom's ethnographic work predates "new forms of algorithmic, but probably equally asocial structures are to be determined". Intermediation still pre-dominated in the initial stages of electronification, as catalogued in Zaloom's work.

MacKenzie does examine the growing trend towards disintermediation. Even so, to prevent his project from becoming "overcomplicated", MacKenzie does not extensively analyse the regulatory initiatives that followed the 2008 financial crisis.

Seddon generalises his findings to comment on the influence of competing interests on the evolution of the macro-regulatory environment. Seddon does not seek to analyse the conduct implications of algorithmic deployment and increasing disintermediation per se (Nasi, 1996, Volkman, 1999, Kozinn, 2000, Verstein, 2016, Bernards, 2021, Culley, 2020a).

### 6.3 Chapter-specific methodology

To develop the literature, the author examined the effectiveness of two key regulatory initiatives to mitigate conduct risk associated with algorithmic trading. The author decided to focus on the activities of floor<sup>11</sup> trading members (“Category 1”) of the LME and their clients because they sit at the crossroads of traditional open outcry and electronic forms of trading. Nevertheless, many of these members are part of a small but economically significant community of broker-dealers that offer services in a wide range of asset classes (Harrison, 2015). Accordingly, there is a possibility of producing generalisable findings from this population.

Primary data would be collected from semi-structured interviews with ‘elites’ to conduct the study. The author assessed that this approach would facilitate (a) a deeper understanding of how Category 1 firms and their clients are deploying algorithms and (b) a discussion about the implications of this deployment for the effectiveness of conduct risk initiatives. A list of topics to discuss was prepared before arranging the interviews. This ensured a degree of commonality across the interviews to help enable generalisation whilst offering flexibility to explore matters raised in greater depth.

During 2021, the author conducted interviews with the following stakeholders:

- i) eight senior representatives of Category 1 firms;
- ii) a trader from a physical user client;
- iii) a senior manager at a financial client that takes direct electronic access from Category 1 firms and sub-delegates this access to its clients;
- iv) two sales and trading representatives from a ‘disruptor’ algorithmic market maker;
- v) a recent ex-regulator;
- vi) an expert who assists physical users in managing their risks and
- vii) one current and one former representative of Category 2 firms that regularly interact with Category 1 members.

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<sup>11</sup> Known as the “Ring” at the LME because of its circular shape.

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The stakeholders were recruited for their expertise in compliance, information technology, operations, sales, and trading. All participants were guaranteed anonymity, so their identities and job titles could not be disclosed.

The success in enrolling so many leading figures from Category 1 trading at the LME was due to the personal contacts the author cultivated during his career as a compliance professional at three LME member firms. All the same, a sizeable number of invitations were declined or ignored. Despite the guarantee of anonymity, some were anxious about potential infringements of confidentiality obligations, particularly at algorithmic ‘disruptor’ firms such as electronic market makers and high-frequency proprietary traders. Others stated they did not believe they knew how to contribute meaningfully to the project. A few even said that their firms did not deploy algorithms or were not algorithmic traders. This would contradict information published on their firms’ websites. As many interviews were conducted with senior representatives at Category 1 firms, these recruitment challenges did not significantly limit the study.

### 6.4 Findings

First, where Category 1 LME member firms are deploying algorithms in their trading operations, this is usually for ‘order execution’ enhancement purposes. “We don’t classify ourselves as algorithmic traders...certainly not in the purest form” (2021k) said one senior manager. The justifications advanced for this include:

- a) deployment is limited to simple algorithms reflecting order types that are “native” to the LME’s Financial Information eXchange (“FIX”) specification, for example iceberg orders (2020c);
- b) Category 1 firms do not deploy machine learning / artificial intelligence algorithms: “...we haven’t quite got to the point where...customers’ orders and transactions are feeding into a black box where it’s maybe like a dark pool of an algorithmic way” (2021m); and

- c) Category 1 firms serve “metal touching” customers (market participants whose principal objective is to hedge their physical risk rather than to speculate) who have not expressed an interest in using more complex algorithms (2021ac, 2021ae) (2021q).

Second, with some exceptions, Category 1 LME member firms deploy algorithms developed by independent software vendors (“ISVs”). A senior manager stated: “personally, I would like to see us rolling out a proprietary system, but...I’m not sure we’re ready to do that yet” (2021m). **Table 6.1** provides a summary of the ISV platforms that Category 1 LME member firms use.

**Table 6.1** *Software platforms deployed by Category 1 members of the LME (as of 27th March 2022)*

Firm	ATP	CQG	CTS	FFastfill	Fidessa	PATS	Stellar	TT	Vela	Own
AMT	X	X		X				X		
CCBI										
EDF		X	X	X			X			
GFF	X					X		X		
MFL		X	X		X		X	X	X	Neon
SGI										
SXFL		X	X	X		X		X		
SFL		X						X		Star

Notes:

- i. Information is taken from members' websites.
- ii. AMT = Amalgamated Metal Trading Limited (2022t)
- iii. CCBI = CCBI Global Markets (UK) Limited - limited information on website
- iv. EDF = E D & F Man Capital Markets Limited (2022l)
- v. GFF = GF Financial Markets (UK) Limited (2022j)
- vi. MFL = Marex Financial (2022h)
- vii. SGI = Societe Générale International Limited – limited information on website
- viii. SXFL = StoneX Financial Limited (2022c)
- ix. SFL = Sucden Financial Limited (2022i)
- x. ATP = ATPlatform Technology Limited.
- iii. CQG = CQG Inc.
- iv. CTS = Cunningham Trading Systems LLC.
- v. FFastfill = FFastfill Plc.
- vii. Fidessa = Fidessa Group Holdings Ltd.
- viii. PATS = Patsystems Plc.
- viii. Stellar = Stellar Trading Systems.

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- ix. TT = Trading Technologies International, Inc.
- x. Vela = Vela Trading Systems LLC.
- xi. Common or 'native' execution order types (2020m): iceberg, one-cancels-other ("OCO"), stop.

Only two Category 1 members state on their websites that they have created their platforms. A representative of one of those members confirmed that his firm has its change management processes to help maintain the conformance of its platform and the algorithms therein with the LME's requirements. Otherwise, several interviewees perceive that they are very reliant on the "ISVs in this space to help us comply" (2021k), with this being "based on attestations taken from vendors" (2021k).

Third, several Category 1 LME member firms offer their clients DEA to LME Select using application programming interface ("API") connectivity. Using this, clients or indirect clients (persons who receive access to the LME through sub-delegation from a direct client of an LME member) can deploy algorithms with less oversight. An ex-regulator specialising in wholesale trading algorithms declared: "it terrifies me if I'm honest, but no idea how you get a handle on that" (2021g). He went on to say:

*"I think it's absolutely something we've been trying to bang the drum on for ages about this sort of sub delegates... where...you've got maybe three or four firms kind of sitting further down the chain. And then ultimately, some guy, as you said in his book, your faith in God knows where, who's initiating all this activity. And realistically, how do you get a grip over that person? And it's definitely one of those things which I think is going to blow up, you know, another Hound of Hounslow type sort of thing, which will cause us to revisit all this."*

### **INTERVIEW WITH A REGULATOR #1 (2021G)**

This is mainly because an indirect client could deploy an order type or combination of order types to pursue an abusive strategy using API connections taken from several Category 1 members that would be more challenging for those members' surveillance teams to detect. "It's impossible for any organisation to know what a client might be

doing with their other broker relationships” (2021r), asserted one senior anti-financial crime professional.

Arbitrage strategies, e.g. between the LME and the Shanghai Futures Exchange (“SFE”), are particularly popular with customers. Many of these strategies rely on tools to facilitate automatic execution<sup>12</sup> (2021y). It can be challenging to differentiate between legitimate arbitrage and attempts to spoof the marketplace (2020e). Additionally, the cultural influence of the broker dissipates with sub-delegation, especially where indirect participants hail from outside the West: “The culture of the Chinese market is very different from the cultures of the vast majority of the customers” (2021ac) declared one interviewee.

Several interviewees confirmed that their firms collected trading-specific due diligence from their clients taking DEA services (2021r). However, none of those interviewed said they had visited clients or provided dedicated training about the permissible use of algorithms on UK trading venues. One interviewee hoped algorithmic misconduct by DEA clients would be picked up by MiFIR transaction reporting (2021r). This is because, under MiFIR, investment firms are required to flag orders where an algorithm has made an investment or execution decision (2016d).

Fourth, physical customers are also concerned that the (perceived) growth in algorithmic actors at the LME is distorting the market: “...it’s also a risk because it can create a self-dynamic regarding placing orders, receiving orders, and this could lead to a dynamic in the physical markets which would not reflect the reality or the economy” (2021ae). Consequently, the traditional broker offers this type of participant reassurance: “you need to have someone who pushes the red button to stop it [the algorithm]” (2021ae), asserted one. Partially, in response to the presence of algorithms in the market, at least one Category 1 member has ceased offering DEA. “One way we have protected clients is that we don't offer them DMA” (2021q), declared one senior manager, after averring that “algorithmic traders out there are watching the market and are looking to take advantage of what the real market is doing just by trying to get ahead of those participants” (2021q).

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<sup>12</sup> Widely known as “auto spreaders” in the industry.



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Reminiscent of anxieties about front running in other markets that witness a high level of participation by algorithmic actors, the senior manager stated that the firm had created a request for quote (“RFQ”) platform that does not directly connect to the LME Select’s central order book, “...so in a way, we are acting as that buffer as far as other firms are concerned” (2021q).

Finally, some representatives of Category 1 LME member firms do not perceive a direct link between the algorithms they deploy and conduct risk. “The fact that we don’t write algorithms ourselves means that I’m not quite sure that we interlink them necessarily with conduct risk” (2021k), opined a senior manager. As a result, the general perception of those interviewed is that the conduct risks posed by Category 1 members’ algorithms are minimal. Behaviours mentioned during interviews included front-running (2021t), collusive typologies (2021w) and feedback loops emanating from erroneous calibration (2021ae). Furthermore, a senior manager at a Ring dealer tasked with combatting financial crime stated that he did not think the introduction of algorithms had amplified the existing conduct risks posed to his firm (2021r). A consultant acting for Category 1 firms’ physical user clients agreed: “What the algos have been is just like used the term in my paper, barnacles on the bottom of a boat,...and that’s what they are at the moment, but they could get worse” (2021ac). One senior manager averred that execution algorithms could reduce conduct risk because they reduce firms’ dependence on sales staff (2021k).

Some Ring dealers do, however, perceive a direct link between the algorithms created by recent entrants to the market and conduct risk. One senior manager remarked that the disabling of the discretionary order type in LME Select in early 2021 had caused concern among dealers, many of whom felt that this would make them more vulnerable to predatory behaviour: “I had dealers coming to me saying, *“well, this is not great. This just puts us more in the hands of the algos because now we’ve got no way of getting a feel if there’s a bit of movement that...[the algos] are going to see that and they’ll jump ahead of us”* (2021q).

A senior representative of an electronic market maker interviewed for comparative purposes offered insights that reinforce the perception of traditional Ring dealers: "...the conduct risk that we have, which is sort of substantial...is the risk we enter into strategies around spoofing, layering...wash trades, etc" (2021v). He continued: "in some ways, it's heightened because...if you do decide to behave badly, it can be done systematically, whereas I think human conduct risk is, almost by definition, somewhat more limited" (2021v). According to the electronic trading expert, the systematic nature of algorithmic conduct risk makes it more insidious because: "...each event would not be viewed as material, but when you look at the events in totality, they become quite material or [have a] very material impact" (2021v).

### **6.5 Discussion**

The data suggests that contrary to losing ground for, as mooted by Pereira (2020), manual algorithmic trading will continue to predominate at the LME. First, traditional Ring dealers and their clients assert they lack the technological capabilities to develop and deploy sophisticated trading and machine learning algorithms. Second, supporting Zaloom (2006), MacKenzie (2015) and Seddon (2020), the representatives of traditional players interviewed were generally suspicious of enhanced forms of electronic disruption. There are some concerns that execution algorithms could lend themselves to manipulative strategies such as those outlined in Fisher et al.(2015) and Scopino (2015), as well as imitative feedback loops Stoll (2014) and Borch (2016). The risks of these behaviours occurring at disrupters are perceived to be higher by interviewees.

Taken at face value, these claims infer that advanced algorithmic deployment at the LME significantly lags even the medium-scale maturity achieved in securities trading (2019c) and HFT-dominated US futures markets, MacKenzie (2021a). Seddon (2020) explains that this is due to market structure differences. At the same time, the perspectives of representatives of Category 1 firms and their clients do not necessarily reflect all trading at the LME. First, the fact that electronic market makers deploy more advanced algorithms is well documented. Second, some non-member investment managers may deploy machine learning strategies via DEA provided by investment banks offering prime brokerage services. However, they will often execute transactions with non-bank

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members of the LME and arrange for resultant deals to be “given up” to their prime broker for clearing (2021d).

A lack of familiarity frustrated the author’s attempts to speak to bank staff. Therefore, an opportunity exists to develop the findings considering the Prudential Regulation Authority’s (“PRA”) own work in this area (2018e).

Notwithstanding the above, it is noteworthy that participants did not distinguish between clearing and execution-only clients when asked about the sophistication of algorithmic deployment they saw when providing DEA. This is possible because investment managers are not deploying machine learning algorithms in their activities with non-bank firms, or at all, or (b) these participants make a “mental separation” between clearing and execution-only clients.

Perhaps of more concern to regulators is that some interviewees did not associate their algorithmic deployment with conduct risk. This could be because enhanced algorithmic trading is a recent arrival at the LME (Seddon, 2020) Market participants may need more time to reflect on their impact. Alternatively, some interviewees may have been keen to present their firms’ operations positively. Either way, this signals that the FCA’s conduct initiatives may still not be reaching all their intended targets.

In the UK, the UK’s Senior Managers and Certification Regime (“SMCR”) requires firms to assess the fitness and properness of staff performing “algorithmic trading” functions. A year after the first elements of SMCR entered into force for FCA-only regulated firms, the regulator observed:

*“Some support and IT units and e-platform specialists stated that conduct risk did not apply to them. This was particularly unsettling given our own commentary as well as heavy press coverage on ‘conduct of the machine’....”*

### **FINANCIAL CONDUCT AUTHORITY (2020L)**

The findings indicate that this observation may apply equally to manual algorithmic trading. They also imply that the focus on conduct is too heavy on firms in the DEA era.

Zaloom (2006), MacKenzie (2015) and Seddon (2020) have documented how “top-down” market structure design has been spurred by competitive and political tussles between different actors at the state, venue and membership levels is a crucial determinant in how market participants conduct their business. Equally significant are individual clients’ “bottom-up” demands. In a departure from Maguire (2006), the results confirm that Category 1 members are now keen to accommodate clients’ custom arbitrage tools. An increased reliance on software vendors and propensity to support sub-delegation means the concerns raised in Callcott and Foley (2011) are more relevant than ever. These may not be immediately detectable at the venue or material levels. Nonetheless, in seeking to alleviate specific clients or gain a competitive advantage, there may be a temptation to accede to a technical innovation to the detriment of broader market dynamics.

MiFID II has ushered in the controls since MacKenzie (2015) attempt to ensure firms mitigate such risks. Moreover, Miles’s definition of conduct risk currently captures “suppliers”. ISVs currently sit outside the FCA’s regulatory perimeter but could face repercussions because of poorly conceived innovation.

Clients also have a role to play in “ensuring markets work well”<sup>13</sup> through good conduct. However, despite markets having become increasingly disintermediated since Zaloom (2006), a behavioural blind spot continues to exist that is vulnerable to exploitation by unregulated participants. The “Hound of Hounslow” case was proffered by an interviewee as an example of this threat. Using DEA connectivity, an amateur trader devised abusive strategies that contributed to the Flash Crash (Vaughan, 2020). Hence, I am proposing the following amendments to Miles’s definition of conduct risk:

*“Subset of behavioural risk: potential cost resulting from employees, ~~or~~ suppliers **or clients** breaching **expected standards of good** conduct ~~rules~~; or more generally, business loss following staff, ~~or~~ supplier **or client** behaviour (especially **at the expense of** ~~towards customers~~ **other market participants**) that undermines trust or value in the business or creates a ‘disorderly market’.”*

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<sup>13</sup> The FCA’s overriding objective.

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The FCA has a range of tools at its disposal to prevent, detect and punish abusive conduct. There is evidence that these have a strong deterrent effect at the level of firms and their employees, justifying the costs involved (Ashton et al., 2021). While this may be true, employees at FCA-regulated firms are required to undertake role-specific training covering a range of conduct obligations (2020g). For example, Article 3 of CDR 2017/589 (2017f) requires firms to train staff involved in managing algorithmic trading systems on systems and controls applicable to their deployment. These may have contributed to the effectiveness of the FCA's deterrent efforts, even though more work may need to be done at traditional brokerage firms.

Article 25 of CDR 2017/589 does not require DEA providers, such as Category 1 and 2 members of the LME, to formally evaluate their clients' understanding of their conduct obligations. CDR 2017/589 informs the rulebooks of UK trading venues as applied to DEA (Undated-z). Extending the sentiment of Article 3 of CDR 2017/589 to Article 25 could help alleviate some of the concerns raised by interviewees in this chapter. To embed the revised iteration of Miles's definition of conduct risk, it is proposed that policymakers extend Article 25 to include the following:

"A DEA provider shall ensure that its prospective clients have a sufficient understanding of their conduct obligations appropriate to the scale, nature or complexity of their proposed trading activities or strategies. After that, a DEA provider shall evaluate their clients' understanding at least annually, or more frequently because of a material change to a client's activities or strategies."

Practically, the DEA provider could adjust the evaluation to the scale, nature, and complexity of a DEA client's activities. Clients using manual algorithmic trading techniques could be asked to provide proof that relevant staff have completed specific electronic learning courses. Alternatively, more complex arrangements involving investment decision algorithms may necessitate on-site visits. This practice has become more common in the context of anti-money laundering (2019e) and could evolve to include "in-person" conduct training.

The cost of evaluating DEA clients' understanding of their conduct obligations will be a concern. Many DEA providers would wish to assist their clients in sourcing training

solutions. Still, others may be content to leave this to clients if they emanate from a jurisdiction with comparable regulatory standards. To ensure flexibility, it is recommended that this is left to firms' commercial preferences.

### **6.6 Conclusion**

This study's findings suggest that Category 1 members of trading venues may be underestimating the conduct implications of order execution algorithms in their trading operations. These broker-dealers still perceive that conduct risk primarily arises from traditional forms of intermediation such as voice or instant message broking. This indicates that, four years after the publication of *Algorithmic Trading Compliance*, its key messages may not yet be fully embedded at traditional broker-dealers. As many Category 1 firms are also actively trading other asset classes, this perception likely informs activities in other trading venues.

Despite the findings, the study also reveals a perceived correlation between deploying algorithms on DEA channels used by clients and increasing conduct risk. Left unchecked, there is a risk that this perception could contribute to physical users leaving the commodity markets to switch to over-the-counter ("OTC") trading. The recommendations made in this chapter contribute some practical amendments to CDR 2017/589 to help firms offering DEA and policymakers maintain traditional users' confidence in the LME and similar trading venues as reliable forums to discover physical reference prices.

## **Chapter 7      How effective are the enforcement activities of derivatives exchanges in the digital age? A survey of enforcement notices through the lens of HUMANS**

### **7.1 Introduction**

On 4<sup>th</sup> March 2022, the Financial Conduct Authority (“FCA”), Bank of England (“BoE”) and the Prudential Regulation Authority (“PRA”) announced that they had commissioned a skilled persons review<sup>14</sup> into the London Metal Exchange’s (“LME”) “governance and market oversight arrangements” (2022m). This followed the LME's decision to suspend the nickel market on 8<sup>th</sup> March 2022 (Jones, 2022).

The “nickel debacle” rekindled interest in the effectiveness of exchange enforcement. One high-profile commentator on the commodity markets (2021ag) (Blas and Farchy, 2021) Jack Farchy remarked:

*“Historically, the FCA has tended to leave the...policing of market abuse to the exchange. The last major enforcement action taken by the FCA (or its predecessors) against a company over its activities on the LME was more than two decades ago....”*

**(FARCHY, 2022)**

Much has changed in the financial markets in the last two decades. The pace of disintermediation increased thanks to electronic trading platforms (MacKenzie, 2021b). Most markets have closed their trading floors (Markham and Harty, 2008). Non-members have obtained the ability to transact directly on exchanges (Busch, 2016). Algorithms have become a staple of the digital market (Brogaard et al., 2023). Algorithms move faster than humans and help to remove the emotion and fatigue that can lead to bad trading

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<sup>14</sup> Also known as a “section 166 review” after the provision in the Financial Services and Markets Act 2000 (“FMSA”) which grants the FCA the power to request a third party to analyse a regulated person’s systems and controls.

decisions or errors (Borch and Lange, 2017b). Undoubtedly, these changes have had wide-ranging implications for enforcement strategy.

More generally, Feldman (2018) calls for a re-evaluation of the effectiveness of legal approaches towards enforcement. Feldman's central proposition is that most wrongdoers are not calculative, but many enforcement methods assume they are. In light of this, attempts at deterrence often fail. Drawing upon the critical tenets of Feldman's work, Hunt (2023) offers practitioners a simple lens called "HUMANS" to critique the effectiveness of their compliance programmes. In conceiving rules to aid the application of HUMANS, Hunt hypothesises that "a rule designed for an analogue world might not work in a digital one". The same might be the case for enforcement techniques.

This chapter seeks to act as a catalyst for shifting debate in the academic literature concerning the efficacy of exchange enforcement. Until now, academics have conducted this debate almost exclusively through a legal lens. This chapter endeavours to encourage the greater use of behavioural lenses. This chapter uses HUMANS to generate insights into the effectiveness of the enforcement activities of four comparable derivatives exchanges: the Commodity Exchange Inc. ("COMEX"), two fundamental divisions of the Intercontinental Exchange Inc. group: ICE Futures Europe ("ICE EU") and ICE Futures U.S. ("ICE US"), and the LME. This study uses the findings to suggest how exchanges could enhance enforcement programmes.

The remainder of this chapter is structured as follows. First, the chapter surveys the literature on exchanges' evolution and enforcement activities. This section also provides an extended introduction to the work of Feldman and Hunt and the exchanges that are the subject of this chapter. Second, the study's methodology is outlined. The third section details the research findings, structured through the lens of HUMANS. This is followed by a discussion which situates these findings within the body of previous research and considers their implications for future practice. The debate also stipulates the study's limitations and suggests directions for future research. Finally, a conclusion reflects on the overall significance of the investigation.



## 7.2 Chapter specific literature review

### 7.2.1 Financial market misconduct: balancing public and private approaches

Billed as a “growth area” of research (Cumming et al., 2015), financial market misconduct is elastic (Yadav, 2016) and unquantifiable (Cumming et al., 2018). Often faced with an inequality of arms (financial resources, expertise) public law enforcement agencies struggle to detect (Gottschalk and Glasø, 2013) and prosecute corporate misconduct (Eisenberg, 2017). Incentives to self-report violations are seldom acted upon (Soltes, 2019). Added to this are political restraints on criminalising misconduct in the financial markets. Some offenders are considered “too big to fail or jail”, lest this create systemic risks for the financial system (Hardouin, 2017). Fearing that the aggressive pursuit of offenders through the criminal courts would result in increased jurisdictional arbitrage, some policymakers may be tempted to advocate for leniency (Gully-Hart, 2005). The prospect of a reduction in tax receipts or job openings may be enough to discourage impactful enforcement (Lord and van Wingerde, 2019) or sentencing (Coffee Jr, 2021). Then, there are myriad evidential hurdles that the public prosecutor of financial market misconduct has to navigate. Large institutions with complex organisational structures make the assignment of blame arduous when seeking to prove guilt beyond a reasonable doubt (Coffee Jr, 2021).

Faced with these difficulties, public policy in Western nations has tended to favour placing heavy reliance on private organisations to help regulate conduct in financial markets. This is most notably the case in the Anglosphere. This includes exchanges. Private enforcers benefit from higher levels of expertise, funded by licensee levies or member dues rather than taxpayers. This means they are more likely to detect misconduct, a pivotal part of deterrence (Croall, 2004). An emphasis on securing the cooperation of the regulated means that private enforcers are more inclined to persuasion than coercion. This explains the frequent use of out-of-court settlements. These are attractive to the accused because they limit the scope for reputational damage. Simultaneously, they spare the enforcer the expense of a lengthy criminal trial

with a good chance of embarrassing failure because of the high burden of proof (Croall, 2004).

The emphasis of private enforcement on cooperation is one of its fundamental weaknesses, assert critics. First, justice is not “seen to be done”, giving rise to a sense of “two-tier” justice in some quarters (Croall, 2004, Larsson, 2007). Second, licensees will be tempted to “pay lip service” to regulatory compliance if they believe they can settle “away from the cameras” if caught. This is why regulation is often reinforced by the threat of public prosecution, even if this is rarely used in practice. Policymakers in the UK have even equipped financial regulators with the powers to initiate criminal proceedings. The FCA has shown a willingness to use these powers despite securing few convictions. Contrarily, the FCA’s US counterparts, the Commodity Futures Trading Commission (“CFTC”) and the Securities and Exchange Commission (“SEC”), do not have these powers and are instead fixated on issuing fines (Francis and Ryder, 2019). Indeed, a complex web of public and private enforcement agencies amounts to another Achilles heel in the Western world’s efforts to prevent, identify and punish financial market misconduct (Kempa, 2010). For example, in the UK, the FCA, City of London Police, National Crime Agency, and Serious Fraud Office could all be involved in a case. Various agencies may be conflicted, compete with one another for high-profile cases, or be confused as to their respective roles. Throw the enforcement apparatus of trading venues into the mix, and the picture becomes even more Byzantine.

In many respects, enforcement action taken by exchanges is mundane. This may explain why researchers have hitherto expressed limited interest in this area, as for other self-regulatory organisations or private regulators such as the Financial Industry Regulatory Authority (Black, 2013). Furthermore, it is very challenging to gauge the effectiveness of the costly surveillance and enforcement apparatus operated by trading venues (Aitken et al., 2015). This was distinctly evident during the intense period of globalisation and digitalisation that followed the year 2000.

### **7.2.2 Globalisation and digitalisation: exacerbating traditional anxieties surrounding exchange enforcement**

Traditional anxieties concerning the suitability of the “for-profit” exchange as a self-regulator and enforcer (Omarova, 2010) have been exacerbated by globalisation (Bradley, 2000). Demutualisation spawned the emergence of the cross-border “mega exchange” (Brown, 2013). Covering several asset classes and operating from several financial centres, these exemplars of globalisation pose a significant challenge to monitoring and enforcement (Diaz and Theodoulidis, 2012). Fierce competition forced former national champions to rapidly internationalise their offerings in search of a more significant market share (Petry, 2021). Thus, cultural preference fused with digitisation sparks ever-increasing disintermediation, harmonisation, and financialisation. The familiar faces of bustling, often chaotic, trading floors disappeared (Markham and Harty, 2008). Faceless and remote trading occurred, frequently employing algorithms and conducting them at high speeds. Exchanges have outgrown their regulators, contend some (Mahoney, 1997). Abusive actors, or their agents, no longer exclusively lurk in pits or dealing rooms. Now, they may be sitting behind a screen on the other side of the world thanks to direct electronic access (“DEA”) (Culley, 2022). Even worse, highly sophisticated actors might “weaponise” artificial intelligence to engage in misconduct (Azzutti et al., 2021). Such features make trading in the digital era even less transparent than in the analogue age. Trading pits appeared chaotic to the untrained eye. Even so, they were regulated by social norms. Poor behaviour could lead to costly ostracisation. Most key players were concentrated in one location (Zaloom, 2006).

Courting new sources of liquidity, the newly minted global exchanges rushed to create products attractive to speculators (Boyd et al., 2018). The exchanges risked alienating their traditional constituency: commercial hedgers (Carter and Power, 2018). Suspicious of being “front run” or spoofed by high-speed traders enticed by greater standardisation, rebate programmes and other incentives (Seddon, 2020), hedgers sought reassurance from trading venues that they would be protected from abusive behaviours (Boyd et al., 2018). Nevertheless, the demutualised exchange may not be sufficiently incentivised to deter abuse, especially concerning commodity futures (Pirrong, 1995). Idiosyncratic specifications and market participants’ reluctance to fragment liquidity creates the

conditions for natural monopolies (Posnick, 2015). Accordingly, a chief benefit of private regulation present in stock markets, namely relying on competition to calibrate the assertiveness of enforcement policy (Stringham, 2002) (Stringham and Chen, 2012), is lost. This may explain why some exchanges were accused of underinvesting in their surveillance and enforcement apparatus in the early years after demutualisation (2010) (Kellerman, 2021). An alternative reason is fear of frightening customers away. Regulatory developments in the EU and the US gave birth to alternative sources of liquidity such as Alternative Trading Systems (“ATS”), Multi-Lateral Trading Facilities (“MTFs”), Organised Trading Facilities (“OTFs”) and Systematic Internalisers (“SIs”) (Clausen and Sørensen, 2012). Compared to ATSS, trading on MTFs, OTFs and SIs is not restricted to securities (Helm, 2023).

### **7.2.3 Moves towards a more muscular approach to enforcement**

The reluctance to lose business may have caused exchanges to rely on less formal enforcement mechanisms in the past (Stringham, 2002). Wishing to be seen as “honest brokers”, brokers and traders were loathed to agitate one another lest this led to the loss of a critical source of liquidity (Gunningham, 1991). Exchanges exploited this anxiety by publicly “naming and shaming” errant actors, for example, on a noticeboard (Stringham, 2016). This practice has continued, albeit via electronic means. Circulars give notice of disciplinary / enforcement action taken and are routinely published on public websites and emailed to those who wish to subscribe to them (2013a, Undated-o, Undated-y, Undated-ad). Nonetheless, faced with increased scrutiny in the wake of major incidents such as the 2007-08 financial crisis and the 2010 Flash Crash, exchanges have been forced to up the ante (Carson, 2011, Kellerman, 2021). The more muscular approach has seen exchanges:

- (i) take thematic initiatives in response to prevailing concerns, for example, in response to the US Commodity Futures Trading Commission’s “war on spoofing” (Mark, 2019). A key aim of enforcement action emanating from thematic work is to motivate other actors, usually member firms, to improve their systems and controls (Azzutti, 2022). Central to this approach are (a) levying significant fines to attract the attention of market participants and (b)

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publishing detailed enforcement notices that serve as “learning tools” to guide their future conduct. The following statement in a recent LME disciplinary case where a member was fined £100,000 for deficient systems and controls to detect market abuse is typical of this approach:

*“The LME reminds Members of the importance of having in place appropriate and adequate risk management systems in order to detect, deter, and deal with trading activity which is potentially indicative of market abuse.”*

### **LONDON METAL EXCHANGE (2023G)**

- (ii) utilise additional powers granted to them by statute to extend their jurisdiction over non-member actors and, where necessary, take direct enforcement action against them. Notable examples are Rules 418 and 4.00, introduced by COMEX and ICE US, respectively, in response to §38.15(a) of the 2010 Dodd-Frank Act. These rules state:

*“Any Person initiating or executing a Transaction on or subject to the Rules of the Exchange directly or through an intermediary, and any Person for whose benefit such a transaction has been initiated or executed, expressly consents to the jurisdiction of the Exchange and agrees to be bound by and comply with the Rules of the Exchange in relation to such transactions, including, but not limited to, rules requiring cooperation and participation in investigatory and disciplinary processes.”*

### **COMMODITY FUTURES TRADING COMMISSION (2012c)**

As seen in the Findings section, these rules have become significant in US trading venues as digitisation has become more pervasive.

- (iii) increasing the amount of fines levied in an attempt to strengthen the deterrent effect of enforcement action taken (Polansek, 2016). One scholar concluded that exchanges' penalties aimed at deterring significant instances of market manipulation, such as abusive squeezes, had hitherto been too small to be effective (Pirrong, 1995); and
- (iv) issuing permanent bans in response to severe breaches to serve as the ultimate deterrent. Labelled as the contractual equivalent of a "death penalty" (Karmel, 2008), self-regulatory organisations have been particularly keen to deploy this when an actor accused of misconduct fails to engage in investigatory or disciplinary proceedings (Macey and Novogrod, 2011).

### **7.2.4 Limitations of exchange enforcement**

Despite these efforts, exchange enforcement operates within the context of certain constraints. First, cynics assert it represents an insincere attempt to stave off government intervention (DeMarzo et al., 2001). Second, exchanges lack the supervisory competence of their government "overlords" (Azzutti, 2022). Exchanges cannot perform cross-market surveillance outside their commercial group (Aitken et al., 2015). Even if they do possess better information, superior experience and higher legitimacy than public sector bodies (Lee, 2000), an exchange cannot issue subpoenas or take punitive enforcement action (Cumming and Johan, 2008) (Black, 2013). Third, exchange enforcement is vulnerable to the budgetary whims that sometimes befall commercial organisations (Reiffen and Robe, 2011). Fourth, some claim that the relatively limited enforcement powers available to exchanges mean that the outcome of any enforcement actions they bring is unlikely to influence regulatory reform (Gadinis and Jackson, 2007). Finally, it has also been argued that an expulsion only serves as a deterrent if membership in a "club" is perceived to be highly valuable (Macey and Novogrod, 2011). Therefore, as intermediation has declined in importance, so has the value of market membership, be it at an entity or representative (broker or trader) level.

### 7.2.5 Rethinking approaches to enforcement

Advocates of exchange regulation cite quicker enforcement at no cost to taxpayers as being among its main benefits (Tarbert, 2021). Hence, private enforcement by exchanges appears to be here to stay. All the same, the limitations are of the type that have motivated some scholars to advocate for a different approach to enforcement. In particular, Feldman (2018) is credited with conceiving a new branch of scholarship that aims to inspire a rethink in enforcement policy based on behavioural ethics. For Feldman, there are three types of wrongdoers:

- (1) erroneous: those who engage in misconduct by mistake or because of a lack of awareness;
- (2) situational: those who seek to rationalise their behaviour when presented with an opportunity to misbehave, cut corners, or imitate others in their social circle; and
- (3) calculative: those who intentionally seek to do wrong having weighed up the cost benefits of doing so.

Feldman asserts that enforcement strategies should primarily target “good people” who engage in poor conduct by accident or self-deception. This requires recognition that wrongdoers:

- (1) do not always behave rationally;
- (2) may seek to rationalise their behaviour to maintain a positive self-image, for example, based on their degree of respect for a rule or if an action is performed in the name of their employer and only benefits them indirectly;
- (3) are not always conscious that they are engaging in misconduct because they are either ignorant of applicable regulations or blinded by their self-interest;
- (4) sometimes engage in misconduct “automatically”, for example, in response to situational or organisational pressure;

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(5) emanate from different social and moral constituencies that are constantly evolving; and

(6) fuelled by a desire to cooperate, they are more prone to misbehaving in a group.

In consideration of the preceding, Feldman avows that more effective enforcement strategies:

(1) employ a combination of “traditional” (incentive-based, i.e. fines or rewards) and “non-traditional” (for example, increasing accountability and reflection) methods to target the different types of wrongdoers;

(2) emphasise the likelihood of detection rather than punishment because people are overly sensitive to this; and

(3) seek to limit the potential for an actor to make excuses for their behaviour.

On the other hand, Feldman claims that less effective approaches:

(1) place too much emphasis on the size of punishment in the belief that this increases deterrence;

(2) impose monetary penalties when this could be counterproductive, for example, small fines that merely place a “price tag” on misconduct;

(3) obsess over “smoking guns” whilst missing the bigger picture;

(4) rely on ambiguity, believing this will reduce the possibility for loopholes but which encourage risk-takers who think they can later rationalise their conduct;

(5) take a “one size fits all” approach, negating the characteristics of different constituencies; and



(6) ignore the importance of securing the trust and perception of legitimacy in those constituencies.

Behavioural scientist and ex-regulator Hunt (2023) provides guidance to help practitioners operationalise Feldman's recommendations. Called "HUMANS", it encompasses the following elements:

- H: Helpful – consider the likelihood of a policy or rule being perceived as helpful by the target constituencies;
- U: Understanding – consider whether a requirement is likely to be understood, both in terms of its substance and why it is being imposed;
- M: Manageable – consider whether the subjects are likely to be: (a) in a position to comply with a requirement with a minimum of friction; (b) deterred by the potential consequences of non-compliance; and (c) persuaded that there is a reasonable prospect of being caught in the event of non-compliance;
- A: Acceptable – consider whether the target constituencies are likely to find the requirements and their enforcers to be legitimate and fair;
- N: Normal – consider whether the target constituencies will find compliance with the requirement natural, especially when compared to peers' efforts to comply; and
- S: Salient – consider whether the target constituencies know what is being asked of them.

Neither Feldman's nor Hunt's insights are specific to exchange enforcement. Notwithstanding, they provide a helpful framework to re-evaluate the effectiveness of their enforcement efforts in the digital age. To conduct such reappraisal using a human lens against the backdrop of "algorithmication" may appear counterintuitive. However, forecasts of the imminent demise of human involvement in trading processes have proved premature (Culley, 2023c, Culley, 2022). This is especially the case in the trading

of fixed income, currency, and commodity (“FICC”) products owing to the lower levels of fragmentation and higher customisation (see above). It is conjectured that this accounts for the lower level of academic interest in these markets than is the case when compared to securities venues. To reduce this gap, this study surveyed the enforcement activities of four trading venues that are predominantly, or exclusively, FICC orientated.

### **7.2.6 Introduction to the four derivatives exchanges selected for this study**

The following section provides an overview of the methodology used to inform the study. First, a brief introduction to the four trading venues.

Founded in 2000, ICE rapidly grew to acquire a significant presence as a venue for trading energy, financial and agricultural derivatives (Brown, 2013). Two of the most important divisions of ICE are ICE EU and ICE US. ICE EU has operated as a Recognised Investment Exchange (“RIE”) under Part XVIII of the Financial Services and Markets Act 2000 (“FSMA”) in the UK since 1<sup>st</sup> November 2007. RIEs are similar to Self-Regulatory Organisations (“SROs”) in the US in that they promulgate and enforce their own rules (Carson, 2011). ICE US is such an SRO, being registered as a Designated Contract Market (“DCM”) under Section 5 of the Commodity Exchange Act 1936 and Part 3 of the CFTC’s regulations (Tarbert, 2021). Neither ICE EU nor ICE US offer floor trading, with the group’s last soft commodity pits closing in 2012 (Wigglesworth and Stafford, 2021). Today, most trading is conducted through the group’s trading platform, WebICE or via third-party remote trading platforms (2010), although ICEBlock is also used to register large-in-scale transactions<sup>15</sup> (2023f, 2017i, 2014d) that have been negotiated off-exchange. As **Table 7.1** As illustrated, ICE EU and ICE US volumes have increased since 2007. As of early 2015, ICE US employed 22 market supervision professionals. At the end of 2022, ICE EU employed 200 people, but it does not publish department-level headcount data.

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<sup>15</sup> Trades that are large “compared to normal market size” in accordance with thresholds specified for particular contracts. For an example, see the ICE Futures Europe thresholds for June 2023.

**Table 7.1** *ICE EU (Undated-g) and ICE US (Undated-h) total annual volume in contracts traded*

	<b>ICE EU</b>	<b>ICE US</b>
<b>2007</b>	138,471,006	53,616,158
<b>2008</b>	152,950,133	80,954,837
<b>2009</b>	165,725,488	93,025,024
<b>2010</b>	217,192,000	107,297,161
<b>2011</b>	268,994,000	107,287,467
<b>2012</b>	295,824,000	182,680,647
<b>2013</b>	315,711,000	423,639,713
<b>2014</b>	391,135,000	358,123,407
<b>2015</b>	896,311,000	365,433,350
<b>2016</b>	966,239,000	370,166,155
<b>2017</b>	1,158,498,000	354,504,852
<b>2018</b>	1,295,448,000	339,098,657
<b>2019</b>	1,105,057,000	324,806,936
<b>2020</b>	1,110,075,000	365,537,704
<b>2021</b>	1,147,573,000	329,120,972
<b>2022</b>	1,081,870,000	390,489,984

**Source:** author's own calculations based on data from references cited above.

COMEX is one of the smaller divisions of the Chicago Mercantile Exchange (“CME”). The CME is credited with having kick-started the drive to demutualisation in 2000 (Keaveny, 2004), although COMEX is a DCM in its own right. 2016 COMEX offered 29 products, but most trading was in gold, copper, and silver contracts. The average daily volume at COMEX is small and declined during the COVID-19 pandemic; see **Table 7.2**. By early 2015, 91% of this volume was being traded on the CME’s proprietary trading platform Globex, with the remainder “pit” and “ex-pit”<sup>16</sup>. This led to the pit’s closure at the end of 2016 (2016c) COMEX shares the market supervisory and enforcement functions with the CME’s other venues (for example, NYMEX). In 2016, this team consisted of 13 lawyers.

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<sup>16</sup> Here “pit” referred to price discovery occurring on a trading floor via “open outcry”, i.e. verbal and signal communication. By contrast “ex pit” referred to privately negotiated transactions between market participants.

**Table 7.2** COMEX (Undated-a) and LME (Undated-b) average daily volume

	<b>COMEX</b>	<b>LME</b>
2007	Unknown	Unknown
2008	Unknown	Unknown
2009	Unknown	Unknown
2010	316,000	Unknown
2011	387,000	Unknown
2012	352,000	Unknown
2013	386,000	Unknown
2014	337,000	Unknown
2015	344,000	Unknown
2016	460,000	618,627
2017	460,000	624,480
2018	639,000	730,498
2019	668,000	696,567
2020	699,000	Unknown
2021	488,000	573,271
2022	521,000	534,478

**Source:** author's own calculations based on data from references cited above.

Having itself demutualised in 2000, the LME quickly sought to emulate COMEX by introducing its electronic trading system, LME Select, in 2001 (Seddon, 2020). Consequently, the demise of the LME's distinctive trading floor, the "Ring", was predicted. Nevertheless, caught in the tussle between financial and physical interests that have dominated politics at the exchange since the introduction of Select, the Ring continues to endure today. Still, its importance has gradually diminished over time. The Ring and Select are complimented by a telephone or "inter-office" market handling orders that are large in scale or customised to specific dates. This function is perceived to be very important by commercial users who laud the LME's status as a forward market with unique date structures, distinguishing it from standardised futures markets such as those offered by the CME and ICE (Gilbert, 1997). Like ICE EU, the LME only publishes high-level data concerning the number of people it employs. 310 people were used at the end of 2022 (2022a), a significant increase from the 105 employed in 2012 when the LME was acquired by the Hong Kong Exchange Group ("HKEX") (McNulty, 2012, 2012a). Post-takeover, volumes peaked in 2018 but have since slumped significantly (**Table 7.2**).

Some have praised the LME for aggressively fighting manipulation (Slavov, 2001) though it has witnessed some of the most significant instances of misconduct in the commodity markets. These include the Sumitomo-Hamanaka abusive squeeze (1996) (Kozinn, 2000), the Metro warehousing scandal (2011) (Posnick, 2015) and the nickel market squeeze (2022). The latter event prompted (i) a regulatory investigation into the LME's governance and market oversight arrangements and (ii) a raft of lawsuits, both of which are, at the time of drafting, still ongoing (Earl, 2023).

### **7.3 Chapter specific methodology**

#### **7.3.1 Sample**

The four exchanges introduced in the Literature Review were selected because (a) ICE EU and the LME are the two oldest extant derivatives venues that are UK RIEs (Undated-ag); (b) and ICE US and COMEX are the two US DCMs that are the natural counterparts to these. The longevity of these venues provides an opportunity to examine the effectiveness of exchanges' enforcement efforts over an extended period. Furthermore, this enables one to collect more enforcement data than is possible for newer venues. All four venues publish a wealth of information online about their enforcement activities. By contrast, some other important venues only provide high-level information about cases they have brought, most notably the Shanghai Futures Exchange.

#### **7.3.2 Data collection**

All enforcement cases since 2007 were harvested from each trading venue's website and, in the case of the LME, the Lexis Nexis database. 2007 was a defining year in the financial markets. Of course, it was the year in which the financial crisis that had been brewing since at least 2005 hit the headlines with the collapse of Northern Rock (LaBrosse, 2008). This would trigger a massive regulatory response that promised to significantly tighten controls on derivatives trading (Helleiner et al., 2018). That this crisis came hot on the heels of the first Markets In Financial Instruments Directive ("MiFID I") is ironic: a central plank of the directive was the introduction of MTF and SI to increase competition to traditional trading venues (de Meijer, 2009). It was this type of competition

that led ICE to purchase The New York Board of Trade (“NYBOT”) in January 2007 (Olson, 2010). NYBOT would change its name to ICE US in September of the same year (Gorham and Singh, 2009). Circa eleven months later, the CME purchased COMEX for similar reasons (2008). The age of the mega exchange had begun. For these reasons, 2007 seemed like an ideal starting point for collecting data.

A total of 799 enforcement notices were collected across all four exchanges; see **Figure 7.8**. Each notice typically contains (i) a summary of the events that led to enforcement action being taken; (ii) a statement of the exchange rules contravened; (iii), if relevant, the weighing of aggravating and mitigating factors in the case, for example, whether the respondent was cooperative whilst under investigation and customers were harmed; (iv) a statement of the penalty imposed, and whether this was reduced by the terms of a settlement or because of financial hardship; and (v) the date penalties become effective. All enforcement notices receive a unique case reference number. An enforcement notice may be linked to other notices based on the same facts, usually in situations with multiple respondents (for example, where an exchange has taken action against an employee and their employer). A notice is generally published swiftly after the conclusion of a case. It is signed off by the head of enforcement, surveillance, general counsel or similar, with the name(s) of the signatory(ies) appearing at the end of the notice.

The author collected various secondary data sources to supplement the enforcement notices. These included:

- (1) annual audited financial statements gathered because these offer insights into market structure, how many staff an exchange employs, trading volumes, revenue streams, and a statement of the principal risks an exchange perceives that it faces in a given year;
- (2) relevant reports from competent authorities. The CFTC conducts supervisory reviews of DCMs to appraise the performance of their enforcement programmes. After completion, the CFTC publishes a report documenting the size, scale and nature of an exchange’s enforcement apparatus, its strengths and weaknesses,

and commentary on notable cases. These reports helped the author match enforcement notices to supervisory priorities;

and

- (3) information gleaned from various websites, predominantly those hosted by the four exchanges and the CFTC and FCA. These assisted with the interpretation of specific rules and in understanding enforcement approaches.

### **7.3.3 Analysis**

First, the author read each enforcement notice to understand its length and typical themes. Then, separate “codebook” tables were created to summarise or extract the key findings from each notice.

Second, Rule REC 2.15.3 (2013c) of the FCA’s Handbook was used to distinguish between disciplinary actions: (a) taken against members; (b) taken against non-members; (c) requiring suspension of a legal or natural person’s access; and (d) instances of referral to national competent authorities for possible further action. Although REC 2.15.3 is a UK rule that does not apply to US exchanges, the author considered it a helpful framework. After all, both COMEX and ICE US hold the status of Recognised Overseas Investment Exchange (“ROIE”) in the FCA’s Register (Undated-ah). This status means that the FCA considers that both US exchanges operate within a regulatory environment that is broadly similar, so much so that they can participate in UK markets (2016h).

Third, the author alighted upon Hunt’s HUMANS as an ideal framework for conducting content analysis. Its ease of use and accessibility justified this. A practitioner designed HUMANS, for practitioners to help them identify, and reflect upon, behavioural themes in their compliance initiatives. Understanding and applying critical considerations for time-poor part-time researchers and busy professionals is easy. The absence of a complex model helps ensure that findings are accessible to the broadest possible audience, an essential consideration in matters of conduct. Equally important is that HUMANS

facilitates the rigorous analysis of qualitative data. A common concern about deductive coding is that it is vulnerable to researcher bias. It usually begins with assumptions (Roberts et al., 2019). Here, HUMANS acted as a natural safeguard against definitional drift. For this reason, each element of HUMANS (as outlined in the Literature Review) was selected to represent an a priori theme. This also helped to mitigate two limitations associated with the study of enforcement notices published by exchanges. These are variability in the (i) detail in enforcement notices and (ii) the pace at which enforcement actions are conducted. HUMANS inspired the author to look for deeper patterns between notices instead of dwelling on temporal and superficial distinctions between cases. Admittedly, it is improbable that any single method could eliminate all bias from these drawbacks.

Finally, the extracts from the notices were assigned codes to facilitate grouping by each element of HUMANS. The author used a set of highlighter pens to indicate the presence of a theme in an extract. Each theme was coded “flat”, i.e. assigned an equal level of importance. To try and ensure the reliability of the coding, the author set the initial work aside and returned to it afresh after an extended break. The enforcement extracts were re-read, and the appropriateness of the initial codes was reconsidered. Occasionally, an item was identified that was deemed to be a better fit to a different element of HUMANS than initially coded. The author was working alone. Without a doubt, a team is better placed to reduce the potential for bias or oversight. Each researcher can take turns coding the same dataset afresh, triangulating different perspectives. To the author, a time lag partly captures team research's fresh vantage point. This study's findings must be read in light of the lone author's constraints.



## 7.4 Findings

### 7.4.1 H = Helpful

This study used the first element of HUMANS to assess the effectiveness of enforcement notices as learning tools.

An initial observation is that the fragmentation of enforcement databases detracts from helpfulness. The enforcement notices for COMEX, ICE EU, and ICE US are all publicly available. By contrast, the LME only publishes a small number of enforcement notices on its website. These notices all relate to enforcement action taken since August 2019 and cover the most significant cases (at least in terms of fines levied) (2023b). To access other notices, one must either obtain them from the LME's Company Secretary team or subscribe to Lexis Nexis (2023d).

At the time of writing, a consolidated database of enforcement actions taken by RIEs and DCMs is not publicly available. Perhaps the most helpful database of enforcement cases is the Financial Market Standard's Boards ("FMSB") Behavioural Cluster Analysis (Undated-j), although this is limited to (a) instances of market abuse and manipulation and (b) does not include COMEX, ICE EU, ICE US or LME cases (Undated-i). Violation Tracker offers a similar service but is US-centric and limited to action taken by federal regulatory agencies (2022u). Coverage of exchange-level enforcement actions by commercial providers is variable. Given that trading venues place substantial reliance on their members to ensure that barred persons do not access their matching engines (2017g) The lack of a consolidated database in a machine-readable format may frustrate this first line of defence.

Subjects' names were "put up in lights" in all enforcement notices reviewed. Individual accountability was strengthened in many G20 jurisdictions in the aftermath of the 2007-08 global financial crisis (Engler, 2018). By extension, disciplinary action taken by exchanges became more critical. Whereas previously they may have been perceived by many to be the financial equivalent of "traffic offences", the implementation of initiatives such as the Senior Managers and Certification Regime ("SMCR") in the UK means that exchange disciplinaries now have the potential to become "conduct events" that

threaten a subject’s future employment prospects (Jordanoska, 2021). Therefore, naming subjects is helpful in several respects.

First, as demonstrated by **Figure 7.1**, firms have access to independent sources that can be used to check an applicant’s fitness and propriety before making an appointment.

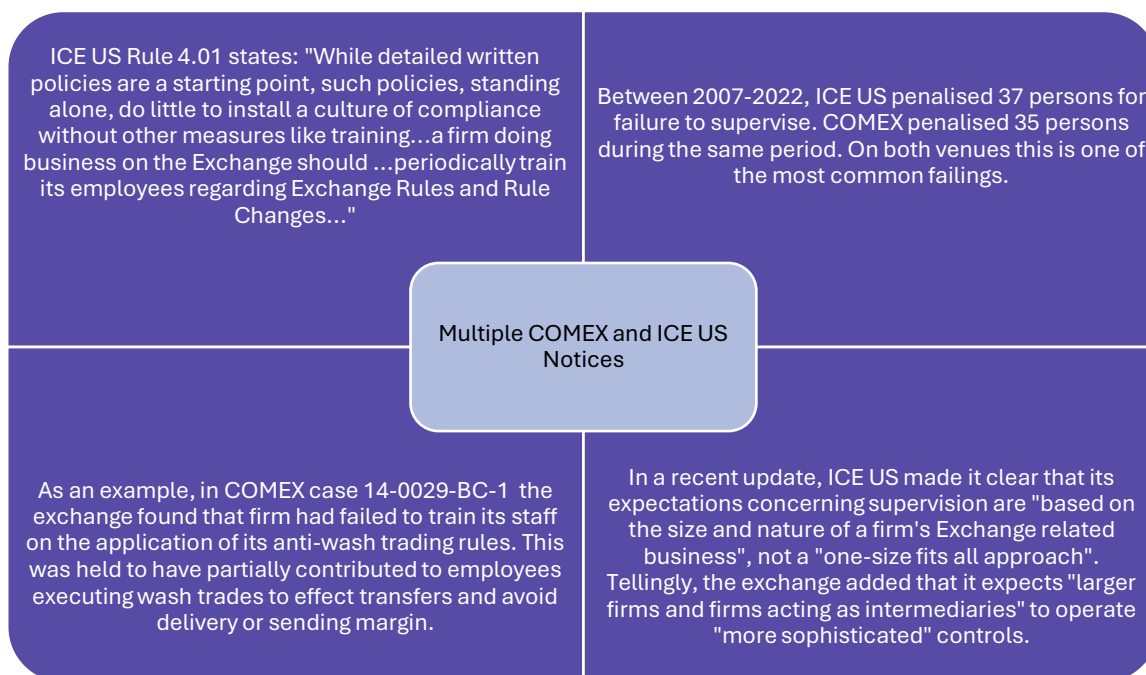
**Figure 7.1** “The front runner”



**Source:** author’s creation based on notice referenced above.

Second, line managers can use these sources to provide role-specific conduct-related training to their staff to help avoid a situation like that characterised by **Figure 7.2**. Some exchange communities, particularly among members, are small (Pirrong, 1995). Learning from cases involving peers is likely to resonate more than theoretical examples.

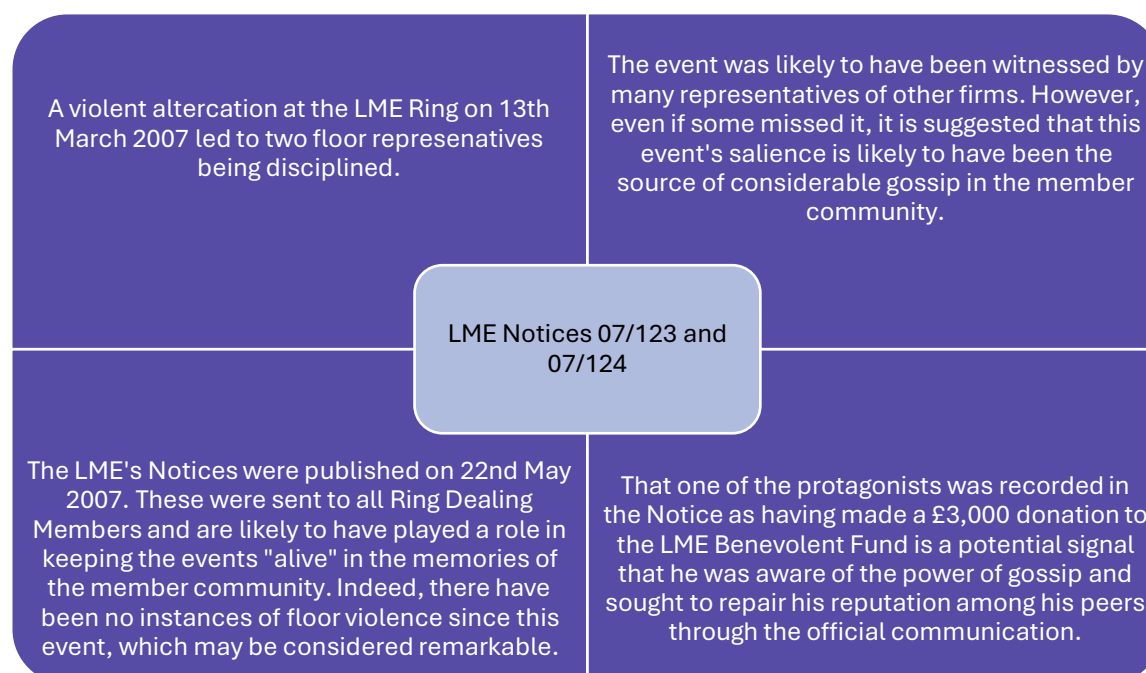
**Figure 7.2** “Failure to supervise or train”



**Source:** author’s creation based on notice referenced above.

Third, named notices can harness the power of gossip, particularly in memorable situations like that described in **Figure 7.3**. This may not be intentional or conscious, but it is submitted that informal channels are possibly more important than formal training in embedding behavioural change.

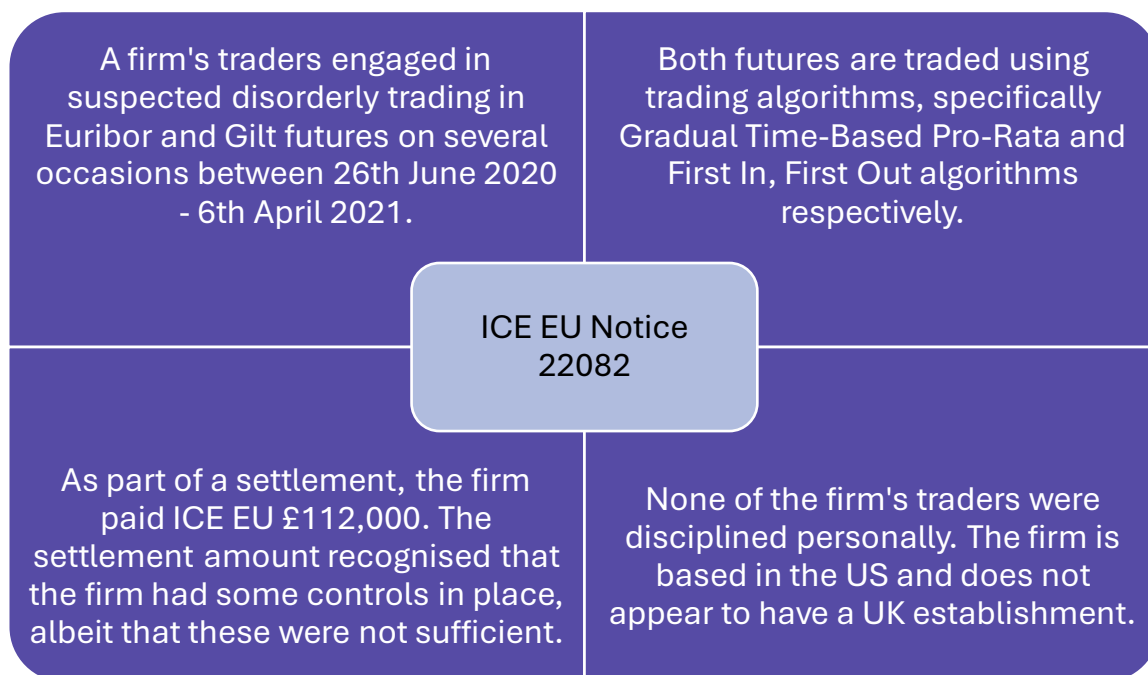
**Figure 7.3** “The Ringside confrontation”



**Source:** author's creation based on notice referenced above.

That an exchange would disclose the parties' names to its enforcement actions may seem natural to readers in the Anglosphere. Identification is only sometimes customary practice in other financial centres. The Shanghai Futures Exchange (SFE) publishes a monthly summary of its enforcement activities. This stipulates the number of actions taken grouped into themes. Absent from this are respondents' names and the specific details of each infringement, limiting the usefulness of the SFE's publications to practitioners. Likewise, the author could not find a single enforcement case on the European Energy Exchange's ("EEX") website. This could mean that the EEX has not brought any or that they are highly inaccessible. Alternatively, EEX could be following in the German tradition of anonymous case reporting as practised by the German regulator, the Federal Financial Supervisory Authority, in many instances (2018c).

As the digital age draws close, certain features of existing enforcement notices might render them less helpful. First, the effectiveness of attributing cases to personalities may decrease with increasing algorithmic action. For example, since 2018, ICE US has issued many summary fines for a failure to retain electronic audit trail data (see **Figure 7.16**). In every case, these are levied against a legal entity rather than a natural person; see the example in **Figure 7.4**. The same approach is taken in some, but not all, cases involving the deployment of trading technology. This could be because the exchange has struggled to identify a human wrongdoer. Whatever the reason, a growing lack of attribution could embolden wrongdoing in the name of one's employer, a catalyst identified by Feldman (2018).

**Figure 7.4** “The disorderly algorithmic traders”

**Source:** author's creation based on notice referenced above.

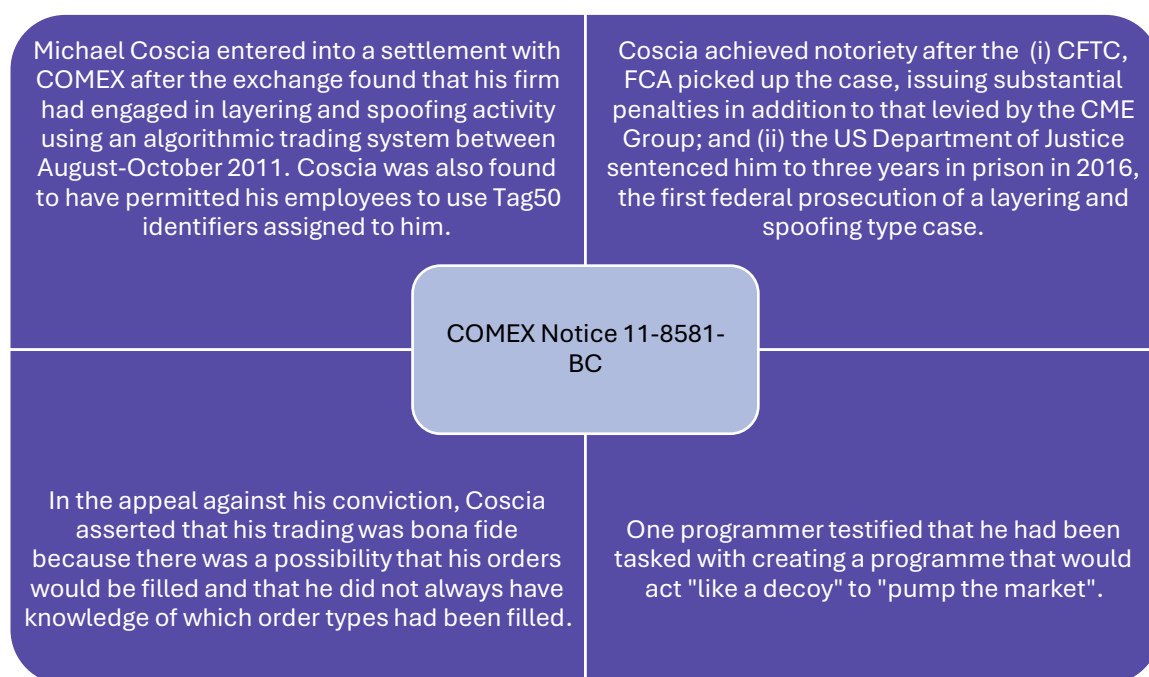
Second, an exchange “community” has become much broader than its membership. An individual may be “named”, but they are not necessarily “shamed”.

Geographically, individuals could be spread everywhere, so they may not feel the same social pressures to conform as representatives of traditional financial institutions that are typically assembled around the historic seat of an exchange. Enforcement notices do not provide clues about the locations or nationalities of respondents. A failure to appear is a potential indication that a natural person accused of committing breaches of exchange rules is based abroad. This is because the penalties for failing to appear are usually very severe (see the section on salience below). **Figure 7.10** shows that the number of persons penalised for failing to appear at hearings initiated by COMEX or ICE US has steadily grown since 2007. Equally, the notable lack of such cases at ICE EU and the LME could indicate a reluctance to pursue individuals based abroad due to the complexities of doing this.

Finally, even where this is not the case, structural and demographic changes to financial institutions may mean that individuals feel more “remote” from an exchange. Unless a financial institution makes an effort to broadcast relevant regulations and the findings from enforcement, it is quite possible that some intended targets are unaware that they

exist. Since nearly all employees of UK financial institutions are now exposed to potential personal liability under SMCR, this would be far from ideal. In contrast to the UK, the US does not currently operate an individual accountability regime (2023a). Regardless, several high-profile cases, like that detailed in **Figure 7.5**, brought by law enforcement agencies and either the CFTC or the Securities and Exchange Commission (“SEC”) after referrals from exchanges demonstrate that the dangers emanating from a lack of awareness are even higher in the US.

**Figure 7.5** *A trailblazing prosecution for an algorithmic spoofer*



**Source:** author’s creation based on notice referenced above.

#### 7.4.2 U = Understand

Following the above, it is conjectured that the target audiences for enforcement notices concerning systems and control breaches are firms’ control functions (compliance, risk) and senior management. Conversely, it is speculated that the target audience for enforcement notices regarding individual conduct is broader. For example, LME disciplinarys about offences occurring on the trading floor must be understood by so-called “barrow boys” (Williams, 2012). This is equally the case whether they relate to dealing with matters such as “bidding out of line with the market” (65 cases), maintaining personal decorum by not using foul and abusive language (three cases), or not dressing

appropriately (two cases). Moreover, as mentioned in the previous section, because of the demutualisation and digitalisation of markets, this target audience has become more diverse as “outsiders” such as “techies” (calibrating algorithms in or outside firms) and “global citizens” (using DEA) participate in trading.

Communicating behavioural expectations through detailed notices is more complicated if the first language of many intended recipients is not English. Indeed, imposing heavy penalties could undermine any deterrent effect a trading venue seeks to achieve. In 2019, the CME claimed that Globex could be accessed from more than 150 countries (2019e). As of 13<sup>th</sup> April 2023, ICE US officially offered WebICE in 23 jurisdictions where English is not an official language. Among the jurisdictions were China, Japan and the UAE, where English proficiency was assessed to be “low” in the 2022 English Proficiency Index (2022g). ICE EU permits access to WebICE from an even broader range of jurisdictions. Of the 33 jurisdictions ICE EU partially or fully supports, a third are rated “low” or “very low” in English proficiency. Access to the LME’s trading platform, LME Select, is currently limited to several jurisdictions. Except for China, France and Japan, English proficiency in all these jurisdictions is high or very high. **Table 7.3** provides a comparison of the various levels of access and English proficiency.

**Table 7.3** Comparison of English proficiency and access to ICE EU, ICE US and the LME (Where ranked)

Jurisdiction	Proficiency	ICE EU	ICE US	LME
Austria	Very high			
Belgium	Very high			
Brazil	Moderate			
China	Low			
Colombia	Low			
Czech Republic	High			
Denmark	High			
Finland	High			
France	Moderate			
Germany	Very high			
Greece	High			
Israel	Low			
Italy	Moderate			
Japan	Low			
Latvia	High			
Lebanon	Moderate			
Lithuania	High			
Malaysia	High			
Mexico	Very low			
Morocco	Low			
Netherlands	Very high			
Norway	Very high			
Oman	Very low			
Peru	Moderate			
Poland	Very high			
Portugal	Very high			
Qatar	Low			
Republic of Korea	Moderate			
Russia	Moderate			
Spain	Moderate			
Sweden	Very high			
Switzerland	High			
Thailand	Very low			
Turkey	Low			
UAE	Low			
Vietnam	Moderate			

Four enforcement notices were sampled to test the likely effectiveness of being understood. One notice issued by each venue (COMEX, LME, ICE EU and ICE US),



representing the heaviest penalty imposed on a natural person market participant (member employee or non-member), was selected. This is because it is considered that a trading venue aims to achieve the greatest salience through the heaviest penalties. The text of the four notices was then fed through the Readability Test tool made available by WebFX to calculate a score for Flesch-Kincaid Reading Ease (Undated-af). Developed in 1975, Flesch-Kincaid readability tests were conceived to assess how easy it is to understand texts written in English. For an overview of the Flesch-Kincaid scale, see **Table 7.4**.

**Table 7.4** *Overview of the Flesch-Kincaid scale and comparison to other measures of proficiency*

Score	Flesch-Kincaid ease of understanding (Native speakers of American English)	Cambridge English as Foreign Language (“EFL”) level (Undated-t)	% of high school students as speakers (Fleckenstein et al., 2016)
100-90	Very easy.	A1 beginners	UK: 18.5 USA: 17.7 Non-native speakers (“NNS”): 48.6
90-80	Easy.	A2 elementary	UK: 24.9 USA: 24.4 NNS: 25.7
80-70	Fairly easy.	B1 intermediate	UK: 28.8 USA: 27.6 NNS: 15.5
70-60	Plain English.	B2 upper intermediate	UK: 19.8 USA: 20.6 NNS: 9.6
60-50	Fairly difficult.	C1 advanced	UK: 8.0 USA: 9.9 NNS: 0.7
50-30	Difficult.	C2 master	Not sampled
30-10	Very difficult.	C2 master	Not sampled
10-0	Extremely difficult.	C2 master	Not sampled

**Table 7.5** summarises the results of this exercise.

**Table 7.5** *English complexity in enforcement notices publicising heaviest trading-related penalties issued since 2007*

<b>Exchange notice</b>	<b>Summary</b>	<b>Year</b>	<b>Fine</b>	<b>FK</b>	<b>Words</b>	<b>%Complex</b>	<b>SL</b>
COMEX 20-1305- BC	Non-member front runs his employer's orders.	2022	\$200k, permanent ban	50.9	497	78 (15.69%)	17.75
ICE EU 21116	Self-employed proprietary trader accused of gaming Liquidity Provider Programme to generate rebates.	2021	£100k fine, two-year ban	41.3	667	132 (19.79%)	19.62
ICE US 2016-045	Individual engaged in layering and spoofing type activity in the Sugar No.11 contract for a sustained period.	2017	\$200k	46.8	508	85 (16.73%)	21.17
LME 18/219	Floor dealer fined for misleading Quotations Committee.	2018	£20k	66	434	64 (14.5%)	13.15

In short, the relatively low Flesch-Kincaid scores for all but the LME notice could undermine the effectiveness of enforcement notices. To better understand their regulatory obligations, individuals trading remotely on COMEX, ICE EU, or ICE US would have to access the notices in either HTML or PDF form and probably copy and paste the text into an application like Google Translate. This may sound simple, but this adds friction to a trader's day in fast-paced markets. The desired "sit up and take notice" effect of imposing significant fines and bans is conceivably limited to parts of the world where proficiency in English is high. Besides, it is surmised that this minimises the possibility of

secondary circulation in non-English financial and trade publications. Occasionally, this plays a crucial role in disseminating the key messages from the exchange's enforcement efforts and other regulatory initiatives. Good examples include coverage of the enforcement action taken by the LME following the Sumitomo-Hamanaka scandal (2000) (O'Connor, 1999), the CME in the Coscia case (Leising, 2013) and in respect of permanent bans handed to three traders for spoofing its base, precious metals and oil markets in 2013 (Borch et al., 2015). Many firms will subscribe to information services offered by Bloomberg, Reuters, and the Financial Times. Hence, it is easier for their staff to stay abreast of critical developments. They have a good chance of reaching non-member traders who may not necessarily be subscribed to receive exchange notices.

The current formatting of some enforcement notices has another consequence for understanding. PDFs are not automatically machine-readable (Undated-aa). As some researchers tip markets to become dominated by machine learning algorithms (Azzutti et al., 2021) This may represent a substantial impediment to their ethical training.

### 7.4.3 M = Manageable

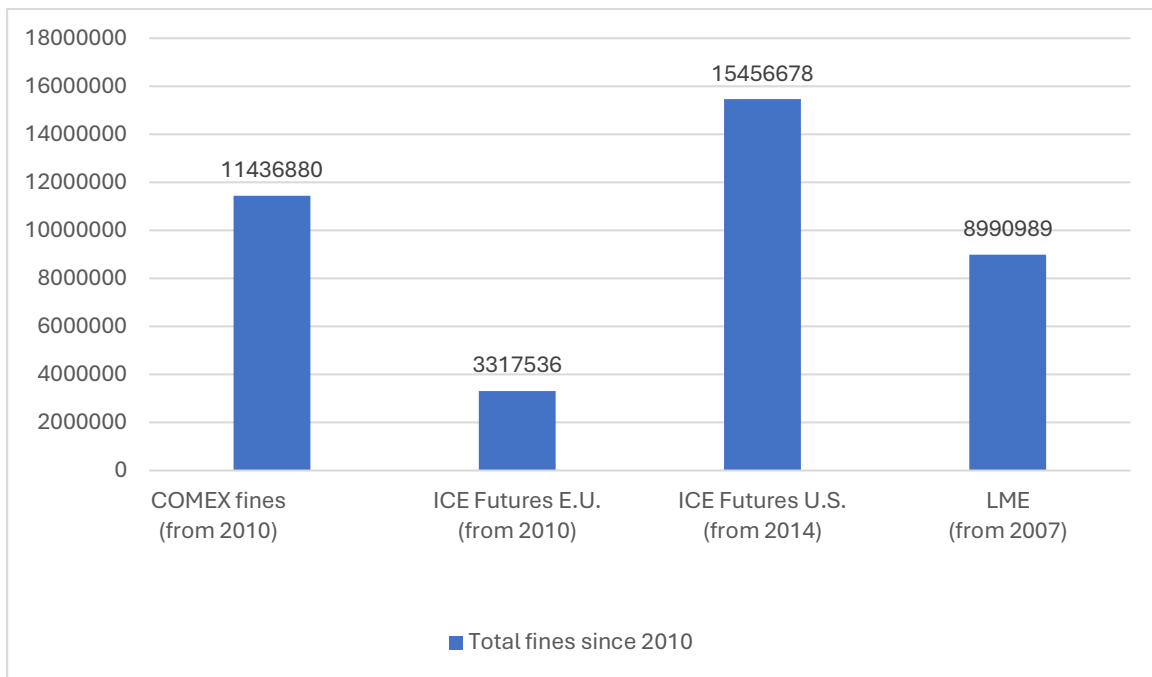
As defined by Hunt, the next limb of HUMANS goes to the root of what exchange enforcement seeks to achieve: deterrence.

To the outsider, the costs of non-compliance with the rules of COMEX, ICE EU, ICE US or the LME might appear trivial. As **Figure 7.6** demonstrates that the revenue generated from enforcement activities is small. For context, the net USD profit<sup>17</sup> for the LME in 2022 alone was \$56m. This is more than the combined total of all four exchanges since 2007, at least in terms of enforcement notices that are publicly available. This risks some calculative individuals merely perceiving certain types of enforcement action, like that described in **Figure 7.7**, as merely being a “cost of doing business”, particularly where an exchange rule is viewed as a nuisance or unduly burdensome.

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<sup>17</sup> ICE EU and LME fines are published in GBP. These were converted to USD using currency website Oanda on 16<sup>th</sup> August 2023.

**Figure 7.6** Annual revenue generated from enforcement activities since 2007 (USD)



**Source:** author's calculations based on data from the enforcement notices listed in the Appendices.

**Figure 7.7** Wash trading to circumvent position transfer rules

**Source:** author's own creation based on notice referenced above.

It can take time for an exchange to approve a request to make a position transfer. For example, the LME can take up to two business days to respond (2022o). Also, there is a possibility that an exchange rejects a request, for example, "*where unacceptable margin or risk requirements would be generated*" (2019b). In the abovementioned example, an organisational view may be taken that a fine of \$7,500 represents only a few seconds' takings.

The CFTC has occasionally chastised US trading venues for handing down penalties so low that they are ineffectual at best and, at worst, even counterproductive. In its rule enforcement review of ICE US concerning the period 1<sup>st</sup> June 2007 – 1<sup>st</sup> June 2008, the CFTC concluded that the exchange's policy for levying small fines of circa \$100 for repeat violations was "inadequate", stating:

*"Such a high non-compliance percentage suggests that members may not have understood the Exchange's trading card requirements, or that the penalties issued for violations of the Exchange's recordkeeping requirements were not sufficient to serve as effective deterrents....levying warning letters and summary fines in the \$100-\$400*

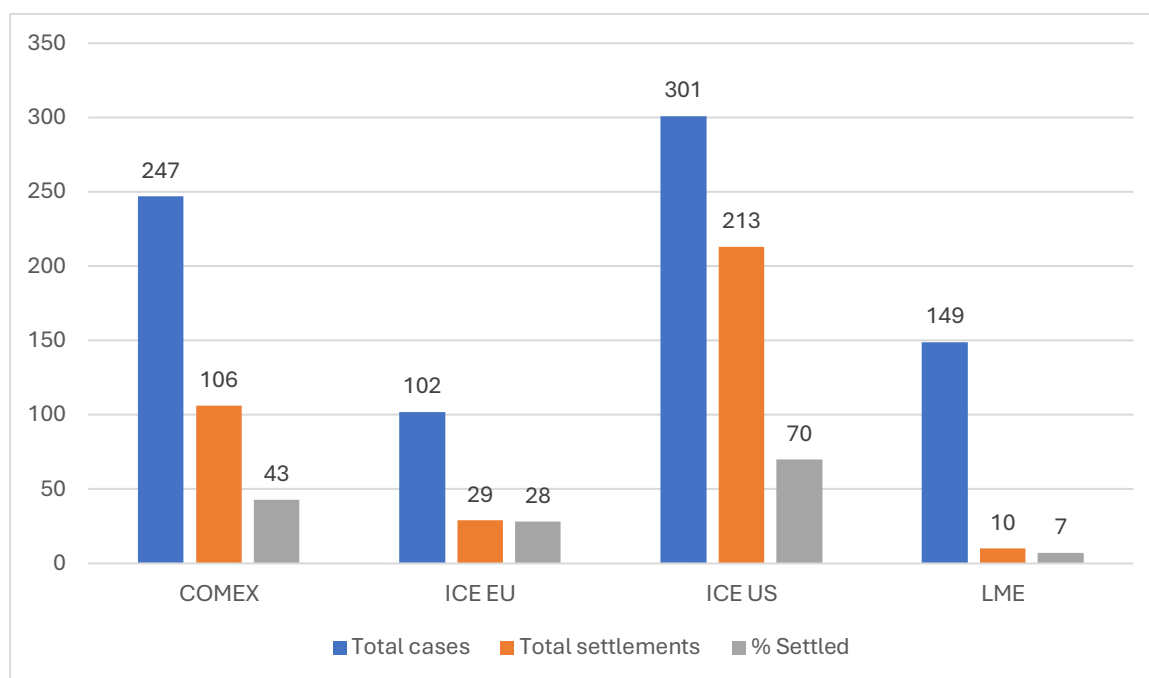
*ranges was viewed by members as a “cost of doing business” rather than a deterrent.”*

### **COMMODITY FUTURES TRADING COMMISSION (2010)**

In a later review relating to the period 1<sup>st</sup> November 2010 to 1<sup>st</sup> November 2011, the CFTC criticised ICE US’s decision in Notice #2010-060 to only fine a firm and its employees \$100k for wash trading (2012c). The CFTC determined that ICE US had failed to identify the systematic nature of the wash trading. Following instructions from management, traders and developers coordinated to design a computer programme for this specific purpose. As such, the fine was inadequate and held by the CFTC.

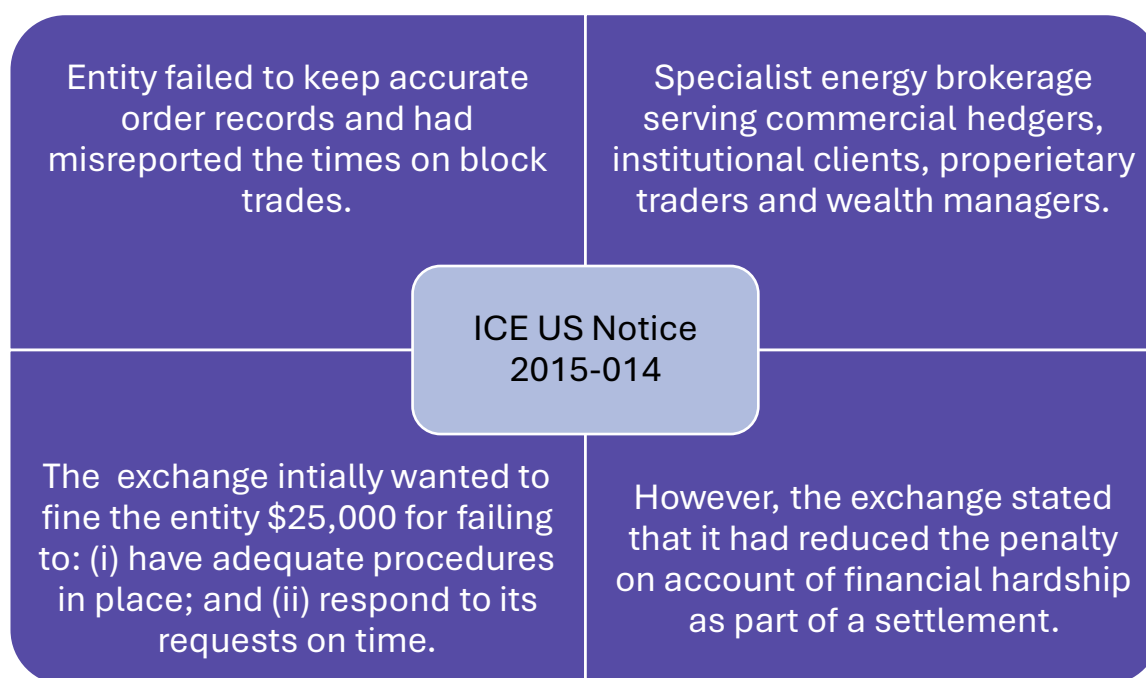
Case #2010-060 touched upon issues discussed about the “Helpful” limb of HUMANS, chiefly the ability to identify a wrongdoer in situations identifying algorithms. A related challenge for exchange enforcement is the temptation to try and “outsource” liability to an algorithm contending that it is difficult to manage. A senior representative of ICE US offered a window into this problem at an industry conference held in 2011. Then Chief Operating Officer Tom Farley said that “they [algorithms] get blamed for everything under the sun” in the soft commodities markets. He elaborated: “I spend a good deal of my day fending off complaints that I get, say, ‘Your fill-in-the-blank ... market has run amok, it’s all high-frequency traders’” when “In reality, it was one guy on the floor who decided to put \$30 mln of sugar in as a market order” (Rampton, 2011).

The high settlement instances, particularly in US cases, could also indicate “liability washing,” i.e., that if one makes a financial settlement, “they have paid for their sins.” **Figure 7.8** provides a comparison of the settlement rates at each of our four exchanges.

**Figure 7.8** *“If I settle, my conscience is clear”*

**Source:** author’s calculations based on data from the enforcement notices listed in the Appendices.

To counter perceptions of weakness, an exchange may be tempted to “go in hard” (see Saliency below). On occasion, the respondent is unable to pay a hefty fine. Counterintuitively, in these circumstances, the loss of a (relatively) small amount of revenue from the trading venue’s perspective could be beneficial. As an enforcer of contracts, an exchange must be careful not to stray into the punitive realm, lest issues of natural justice arise. It follows that a couple of instances where “financial ruin” is pleaded, like that depicted in **Figure 7.9**, can help to create an image that exchange enforcement has “teeth”.

**Figure 7.9** “We could be put out of business”

**Source:** author’s creation based on notice referenced above.

According to Feldman and Hunt, increased frequency of action is the best anecdote to a lack of (a) conviction that rules are manageable or meaningful and (b) knowledge that they exist. As the graphic below exemplifies, this is a tactic that the exchanges examined in this study appear to deploy. Deliberate or not, the effectiveness of such a strategy is difficult to gauge in the exchange context. The ratio of enforcement actions to detections or escalations of suspicious activity is not publicly available. It is well known that the detection rate in proportion to total volume is almost impossible to understand. However, it is suggested that this approach also risks normalising certain breaches, which will be considered under the penultimate element of HUMANS.

#### 7.4.4 A = Acceptable

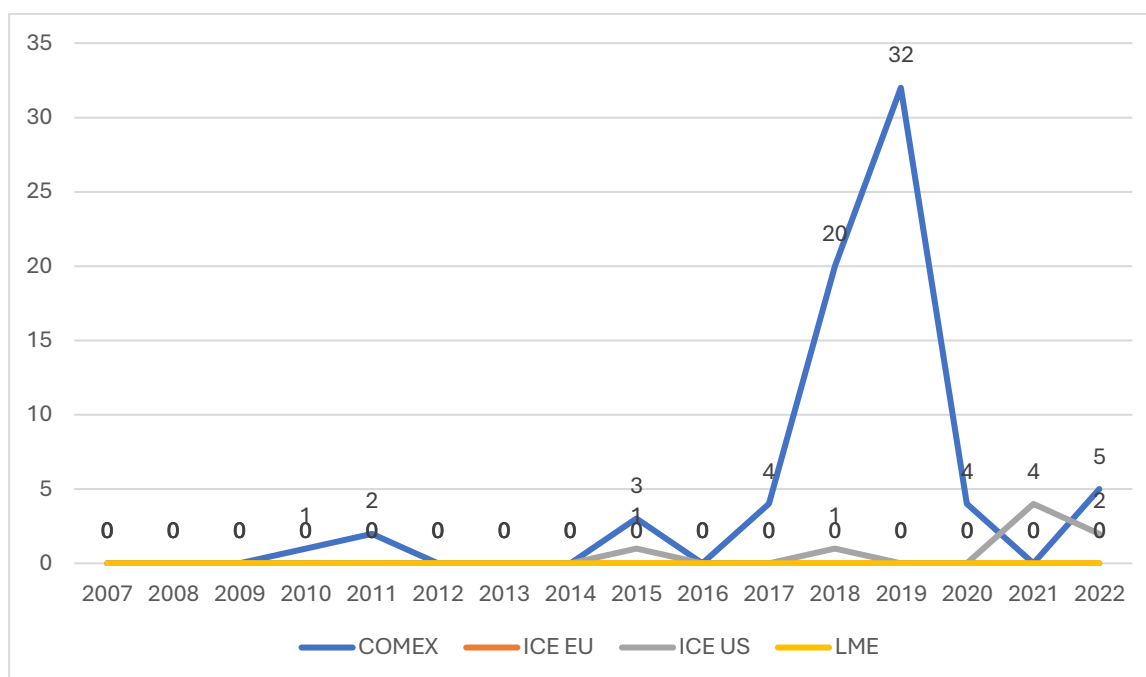
Legitimacy has been observed to play a vital role in exchange regulation. Yet opinions on acceptability among distinct market participants are difficult to measure from enforcement notices alone. Consequently, one is forced to use a range of proxies to gain possible insights.

#### **Example: “No-shows” as a proxy for illegitimacy**



A failure to respond to a request (a) for information during an investigation or (b) to attend an enforcement hearing are strong indicators that a participant does not believe he or she is subject to the same rules as everyone else. **Figure 7.10** shows “no-show” rates since 2007.

**Figure 7.10** *Instances of failure to appear by respondents to enforcement actions per exchange since 2007*



**Source:** author’s calculations based on data from the enforcement notices listed in the Appendices.

Two things are immediately apparent: (1) COMEX’s enforcement processes appear to have been disrespected the most, and (2) no instances of a failure to appear or respond have been recorded at the two UK exchanges, the subject of this study. Possible explanations for this include (i) the global prevalence of CME Globex in comparison to DEA systems offered by the other exchanges (see “Understand” above); (ii) COMEX is more aggressive in pursuing violators than the other exchanges; (iii) a lack of empowerment or willingness on behalf of the UK exchanges to pursue wrongdoers who are based overseas; (iv) wider cultural differences between US and UK styles of enforcement. It is inferred that most non-respondents are based outside the jurisdictions where the relevant exchange is based. Physical attendance may be impractical for such persons (there is no indication in any of the notices regarding whether hearings were conducted in person or remotely, for example, via Microsoft Teams or Google Meet).

Alternatively, some errant overseas participants may believe that their status as DEA traders somehow means they are “off-grid”. Unfamiliar with enforcement processes, they may wrongly assume that if they fail to appear, they cannot be held accountable or cause embarrassment to their employers.

### **Example: instances of disrespect shown to exchange staff and environment**

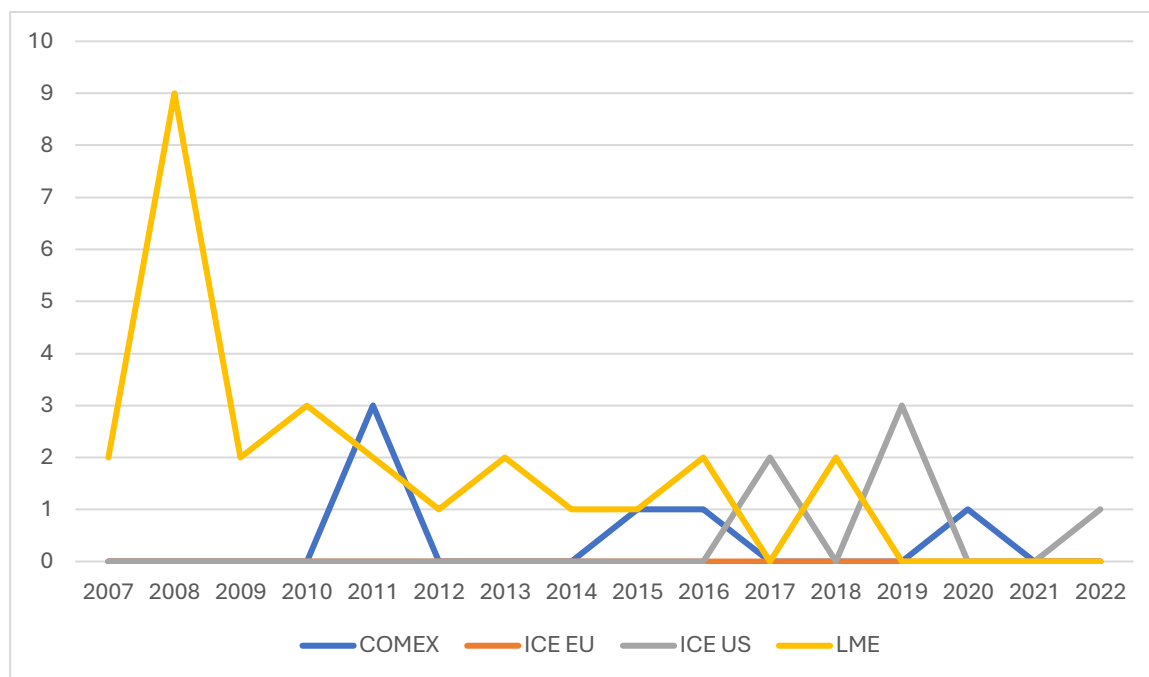
It is reasoned that instances of disrespect shown to exchange staff and the environment by market participants represent a direct challenge to legitimacy. In this case, the acceptability of the operation of a rule or enforcement regime is called into question.

Forms of disrespect typically exhibited include:

- the use of foul and abusive language towards employees or in their presence;
- misrepresentation of facts in response to queries;
- failure to pay a penalty levied for a previous breach;
- breach of cease-and-desist orders;
- bypassing exchange controls;
- directing others to commit breaches;
- in floor contexts:
  - damage to property;
  - dressing inappropriately;
  - consuming food and beverages in full view of monitoring staff;
  - using a mobile telephone on the floor; and
  - standing in the Ring (LME only).

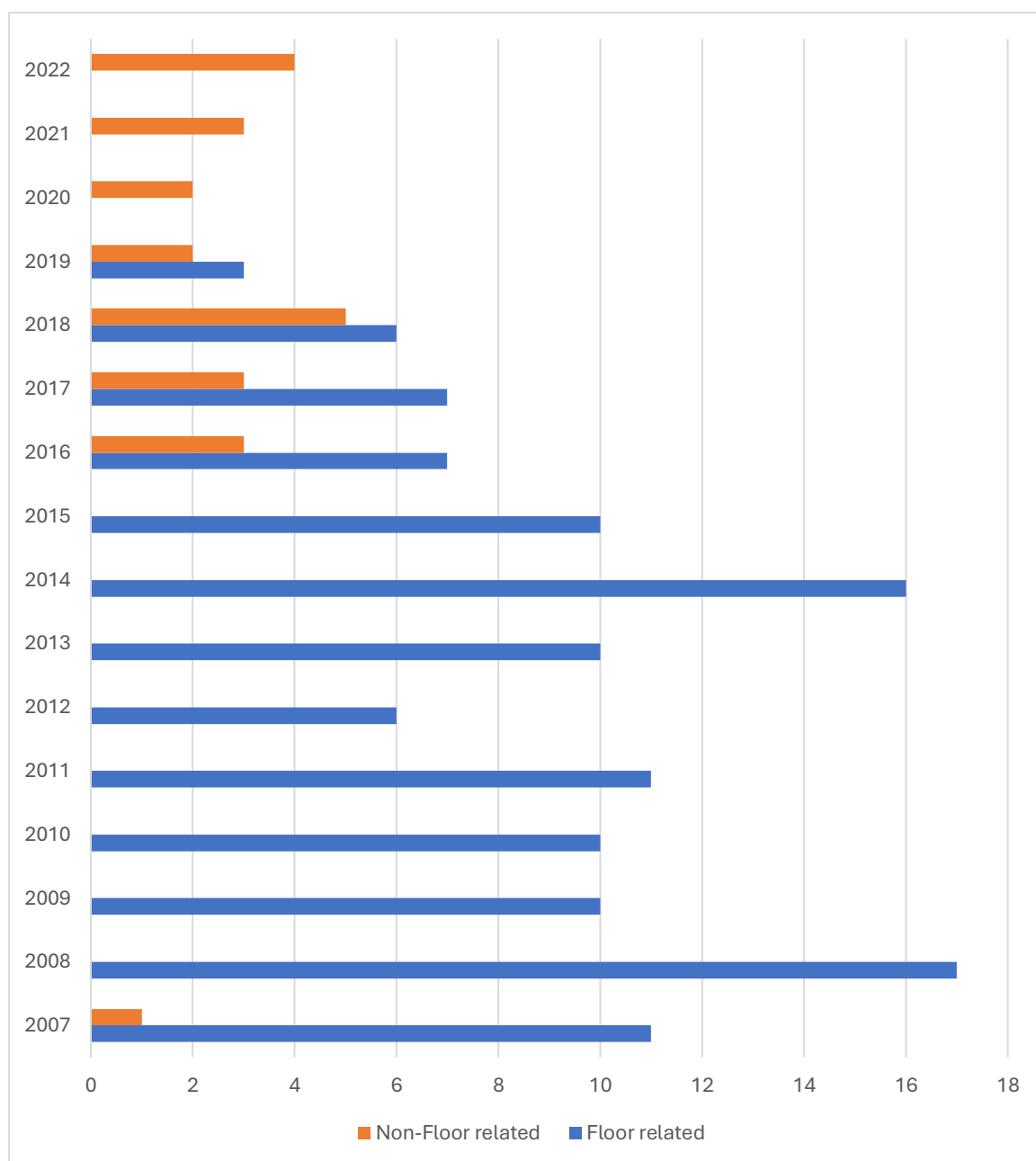
Unlike trade practice violations, instances of disrespect should be easier to observe and, by extension, measure. As a generalisation, the enforcement notices involving these types of misconduct tend to be light on detail because, taken in isolation, many of these breaches appear trivial. Taken together, though, a series of lower-level violations may suggest an endemic lack of respect.

**Figure 7.11** *Instances of disrespect towards exchange staff and environment since 2007*



**Source:** author’s calculations based on data from the enforcement notices listed in the Appendices.

An apparent decline in outward exhibitions of disrespect shown in **Figure 7.11** appears to have coincided with the decline of the trading floor as the digital age has progressed, which is not a surprise. What is surprising is the relative lack of cases when floor trading was more robust. This supports notions of the self-policing nature of private actors comprising an exchange community. Acceptance has been consistently strong since 2007, at least among member participants. Also unsurprising but clearly noticeable is the drop in instances of disrespect during the COVID-19 pandemic when the LME Ring was temporarily closed. Lastly, there is a banal but noteworthy implication of the transition from highly charged personal interaction to more remote, “faceless”, and, in some cases, slower communication between an exchange and its participants. This is because impulsive, situational, and type behaviours may be supplanted by more calculative conduct, whereby individuals take more time to think before acting. It is therefore curious that the LME’s enforcement efforts have remained very floor-centric since 2007, despite the reductions in volumes and role of the Ring (see **Figure 7.12** below).

**Figure 7.12** *LME: balance of floor vs non-floor related actions*

**Source:** author’s calculations based on data from the enforcement notices listed in the Appendices.

Another challenge to accepting exchange rules and enforcement is the rationalisation of misconduct by market participants. There is a risk that specific requirements are viewed as “sludge”, i.e., bureaucratic exercises lacking social utility. Thus, a participant might be tempted to break a rule because this would be “victimless”, beneficial to a client, etc. This is contrasted with types of (suspected) manipulation, which often provoke strong, emotional responses among specific market sections. A high-profile example of this line

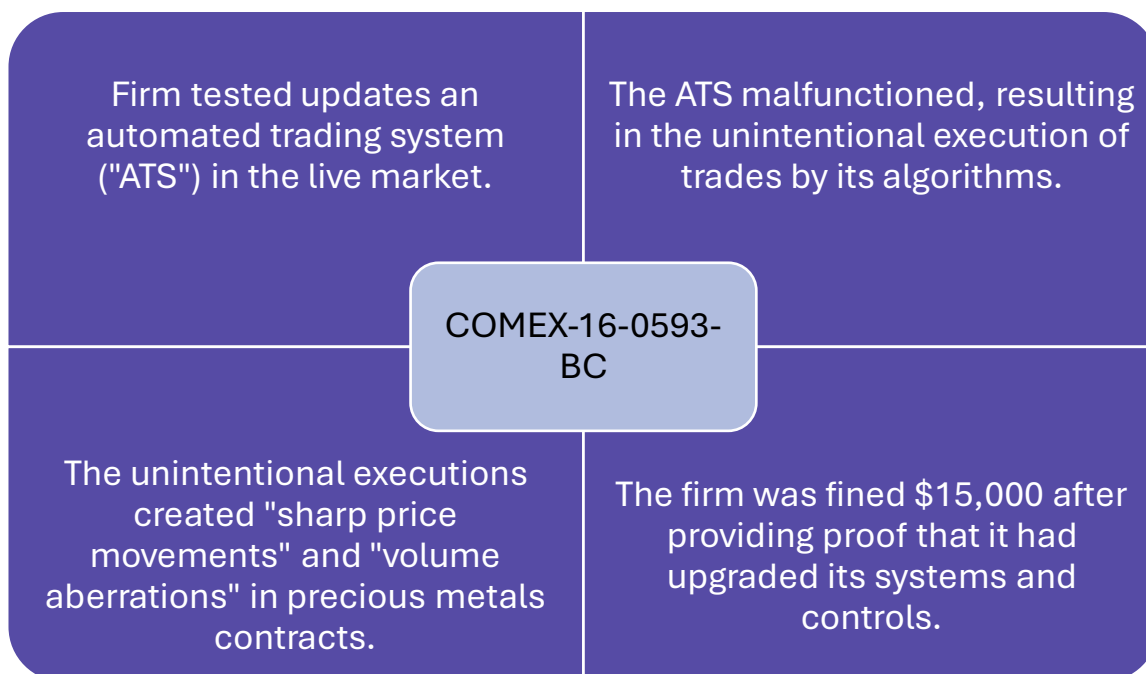
of thinking emerged amid the CFTC’s case against Navinder Singh Sarao, who stood accused of engaging in illegal spoofing activities on the CME’s markets between 2009-2014 (Vaughan, 2021):

*“Still come traders complain, CME tends to impose small fines for minor infractions while ignoring patterns such as Mr Sarao’s cancelled orders, which CME does not have appeared to have referred to the CFTC.”*

**(SCANNELL ET AL., 2015)**

Although taking place in another division of the CME, it is easy to see how this resentment could lead some to rationalise non-compliance in any venue, including COMEX. An example would be a participant testing new or recalibrated algorithms or systems by entering small orders in the “live” market rather than in a “test” environment per **Figure 7.13**. The participant may think that, in contrast to Sarao’s activities, “no one will get hurt”, so they are morally beyond reproach.

**Figure 7.13** *“Procedural breaches aren’t the same as manipulation: it’s a symptom of wading through sludge”*



**Source:** author’s own creation based on notice referenced above.

#### 7.4.5 N = Normal

Enforcement notices may convey messages to their target audience that are wider than their intended purpose. These messages may make participants' compliance with a particular exchange rule seem normal.

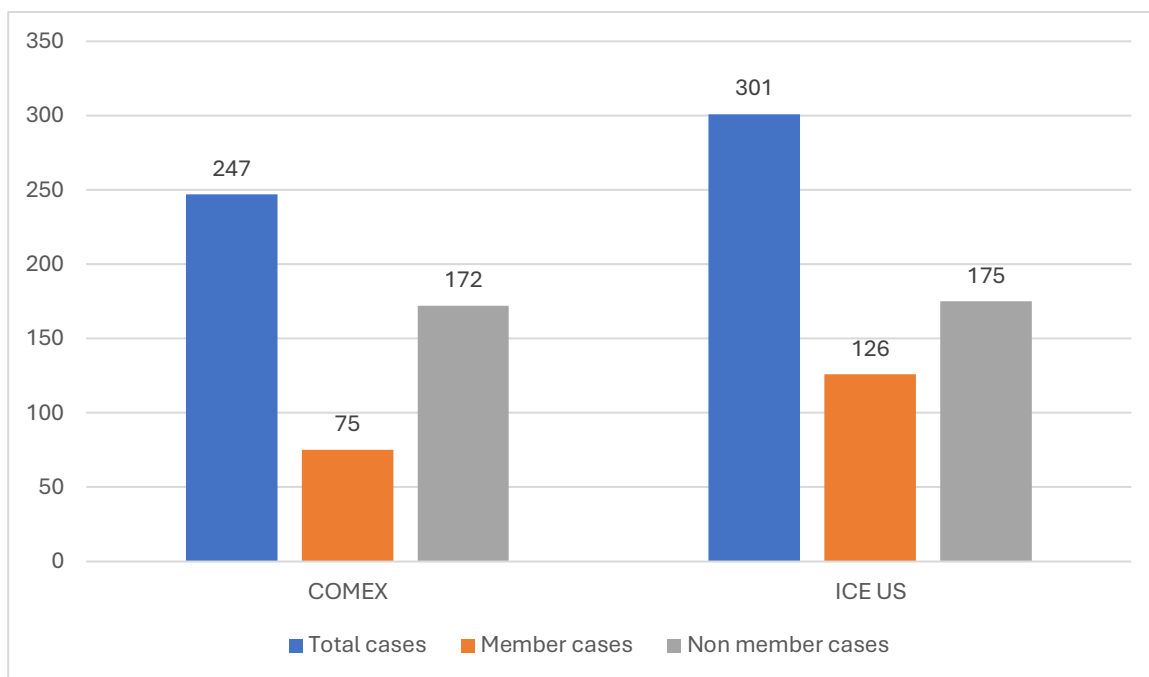
First, a deluge of causes could communicate that “everyone else is doing it, so it’s no big deal” and encourage further breaches of a similar nature. This might be exemplified by:

- the high frequency of “bidding out of line with the market” style cases brought by the LME as a proportion of its total caseload since 2007 (65/149 cases). These offences are committed by a dealer in the Ring who: (i) bids or offers lower, or more, than the offered price; (ii) does not buy the total lots available; (iii) does not sell to the dealer with priority; or (iv) who makes a fictitious offer away from the prevailing market price. In most instances, the offending dealer receives a small fine (typically £2,500 based on recent actions) and penalty points;
- the appreciable quantity of wash and accommodation style cases at the CME (55/247 cases) and ICE US; and
- the relatively widespread non-compliance with block trading rules at the ICE exchanges (ICE US 50/303 cases; ICE EU 12/102 cases).

Second, a shortage of cases might be taken that no one is getting caught for a particular type of breach or that it is a breach “no one cares” about. Notable absences from the enforcement repertoires of each of the exchanges studied for this chapter include:

- the lack of wash trading style cases brought by ICE EU in comparison to the substantial number brought by its sister exchange ICE US (32), even though both exchange share trading infrastructure and, most likely, participants;
- ditto layering and spoofing (two brought by ICE EU versus 44 by ICE US);
- the complete absence of action by the UK exchanges against non-members relative to the regular action taken by the US exchanges against indirect participants (see **Figure 7.14**). This comes across as an anomaly in the digital age.

**Figure 7.14** Breakdown of cases between member and non-member participants at COMEX and ICE US



**Source:** author’s calculations based on data from the enforcement notices listed in the Appendices.

Third, decision-makers contributing to a breach could calculate that the fine poses no threat to them personally as their company will “pick up the tab.” A “parking ticket” is a small price to expedite a tedious process with an uncertain outcome. It is for this reason that the FCA prohibits firms from paying any financial penalties it has levied on their staff:

*“No firm, except a sole trader, may pay a financial penalty imposed by the FCA on a present or former employee, director or partner of the firm or an affiliated company.”*

#### **FINANCIAL CONDUCT AUTHORITY HANDBOOK GEN 6.1.4A (2017H)**

No provision equivalent to GEN 6.1.4A currently exists in the rulebooks of COMEX, ICE EU, ICE US or the LME.

Fourth, the relatively low proportion of cases brought to volumes (**Table 7.1** and **Table 7.2** compared to **Figure 7.8**) is liable to be received by calculative actors in such terms as “there’s so much data nowadays, they can’t examine it all”.

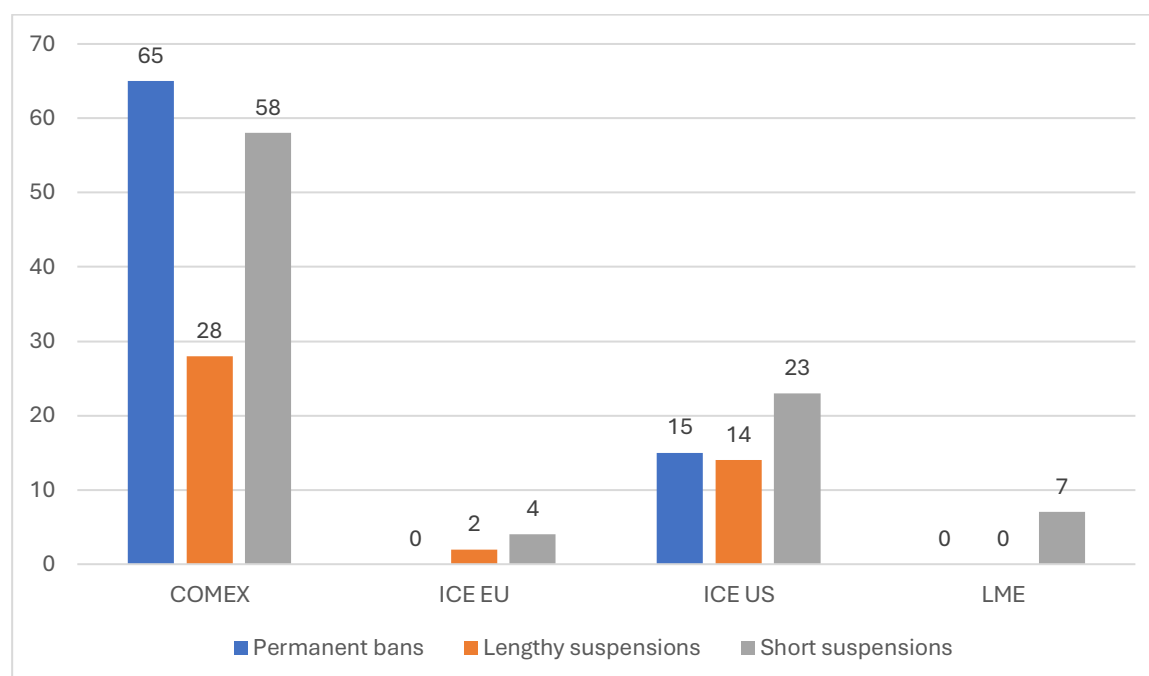
It is challenging to conclude attitudes towards normality based on a review of enforcement actions alone. At any rate, these observations constitute a helpful starting point for exchanges to reflect on the subliminal cues that their actions or inactions can trigger.

#### 7.4.6 S = Salient

It can be inferred from the notices studied for this chapter that the four derivatives exchanges under examination seek to achieve salience in enforcement activities in numerous ways.

First, it has been said that permanent bans are a private club's version of "capital punishment" (Karmel, 2008). Although rarely used by the UK venues studied, this is argued to be a distinguishing feature of US exchange-level enforcement. **Figure 7.15** provides an overview of the number of enforcement cases since 2007 where the trading venues have issued: (a) permanent bans; (b) lengthy suspensions (greater than three months in duration); or (c) short suspensions (3 months' duration or shorter).

**Figure 7.15** *Cases where permanent bans or suspensions have been used since 2007*



**Source:** author's calculations based on data from the enforcement notices listed in the Appendices.



It is immediately apparent that the permanent ban is an exclusively US phenomenon. This enforcement weapon is almost solely used when a respondent fails to appear at a hearing, cooperate with investigatory processes, or respect the outcomes of previous actions, for example, by paying a fine owed. To date, the vast majority of these have been issued to non-members, see **Figure 7.14** and **Figure 7.15**. That being the case, it appears clear that COMEX and ICE US use the permanent ban to make it conspicuous to participants that not engaging with its processes offers no benefits. It is a simple tool: even one unfamiliar with the intricacies of an exchange's rules can grasp what exclusion means: a potential or partial loss of livelihood.

Lengthy bans have similar connotations for market participants, even if they are not "terminal". Exclusion from a market would force a proprietary trader to (a) seek alternative venues or (b) expend wealth whilst being "sin-binned". Seeking alternative venues may not be straightforward. This stems from a possible need to retrain to understand other products and the rules and customs of other market ecosystems. More troubling for such a trader is the possibility that another unrelated venue or its "gatekeepers" (principally, members of that venue) deny him access until the ban has been served. In the era of big data, exchanges will be aware that their enforcement notices will easily be discoverable by regulators, other markets and sell-side firms. Anxious to protect their reputations, such actors may be reluctant to onboard "rolling bad apples" (Zaring, 2019). This serves to reinforce the salience of both permanent and lengthy bans.

On the flip side, it is posited that short-term bans, especially when counted in days rather than months, are likely to be sensed as little more than an irritant by their subjects and other market participants. Very short bans are laid down against the employees of exchange members, who are likely to be "served" by performing non-trading-related tasks. "Star" traders or brokers may "put their feet up" if such tasks are considered "below them" (Miles, 2017). It is hypothesised that it may involve periods of socialising, browsing the internet or dealing with personal accounts. It is envisaged that non-members forced to observe temporary bans on one market would spend time trading on another. However, this could frustrate cross-market strategies, such as arbitrages.

Where member firms pay quarterly bonuses, there is a prospect that a longer, more extended short-term ban on an employee's participation contributes to reducing their variable remuneration.

Another key asset to achieve salience is thematic enforcement. It is observed from the notices reviewed that there have been several clusters of thematic action since 2007. These notable campaigns have included those set out in **Figure 7.16**.

**Figure 7.16** *Notable thematic actions since 2007*

<p>DEA systems and controls (LME 2019-22)</p>	<ul style="list-style-type: none"> <li>•<b>Summary:</b> Series of significant fines given to brokerages for failing to implement adequate systems and controls to prevent market abuse from being committed by their clients using DEA channels.</li> <li>•<b>Notices:</b> 19/266, 19/249, 22/175.</li> <li>•<b>Response to:</b> Implementation of MiFID II (particularly RTS 6), criticism about surveillance failures (Sanderson et al., 2017) (deduced).</li> </ul>
<p>"We are on your trail" (ICE US 2019)</p>	<ul style="list-style-type: none"> <li>•<b>Summary:</b> More than a dozen entities given summary fines ranging between \$2,500-\$5,000 for failing to retain electronic audit trail data.</li> <li>•<b>Notices:</b> 2017-066, 2019-021/022 (13 entities issued fines under same reference numbers)</li> <li>•<b>Response to:</b> Need to demonstrate that Disruptive Trading Practices Review Programme is effective in detecting forms of abuse.</li> </ul>
<p>"No option but to comply" (ICE EU, 2016)</p>	<ul style="list-style-type: none"> <li>•<b>Summary:</b> An entire year's enforcement efforts focused on issuing small fines (£1,000 each) for breaches whereby firms had failed to settle options contracts by the required deadline.</li> <li>•<b>Notices:</b> 16155, 16154, 16153, 16152, 16151, 16150, 16149, 16148</li> <li>•<b>Response to:</b> Unknown.</li> </ul>

The "War" on layering and spoofing  
(COMEX 2013-19)

- Summary:** Raft of fines and bans issued to participants for order book manipulation behaviours intended to deceive other market users.
- Notices:** See footnote 18.
- Response to:** CFTC push for CME to develop the means to detect potential layering and spoofing.

Tag50 "clamp down"  
(COMEX 2014)

- Summary:** significant proportion of venue's enforcement cases for 2014 targeted member firms that had allowed order to be submitted with wrong Tag50 IDs. Tag50 IDs are used to identify trading participants which submit orders using Automated Trading Systems ("ATS").
- Notices:** See footnote 19.
- Response to:** continued anxieties about the misuse of Globex to conduct spoofing, for example in response to CFTC Trade Practice Rule Enforcement Review which had been conducted between 1st July 2012 to 30th June 2013 (deduced).

"Close out by the cut off"  
(ICE EU)

- Summary:** A series of fines against member firms ranging from £5,000 to £50,000 for failing to close positions by 10am cut off, something which caused the exchange's calculation of open interest figures to be inaccurate.
- Notices:** 11048, 11047, 11069, 11068, 1110, 11162, 11161, 11160, 12013, 12190, 12189, 12188, 12187, 13048, 13053, 14017 D01
- Response to:** Unknown or N/A

**Source:** author's creation drawing from notices studied for this article.<sup>1819</sup>

Repetition is central to thematic action. Notably, regular small fines that might go unnoticed under different circumstances achieve higher prominence when clustered together. This carries a risk of desensitisation (see "Normal" above). In like manner, to compound the impact, this tactic might be combined with "shock and awe" fines of the nature discussed in the "Understand" section above.

To finish, disgorgement and restitution are also popular methods of enhancing the notability of enforcement cases at COMEX and ICE US. Disgorgement is where a party must surrender gains made from misconduct. Restitution involves a party compensating

<sup>18</sup> 11-8581-BC, 11-8380-BC, 14-9920-BC, 13-9652-BC, 13-9598-BC, 12-9004-BC, 13-9258-BC, 13-9651-BC, 13-9391-BC, 14-0055-BC, 15-0103-BC-1, 15-0103-BC-2, 14-0059-BC, 15-0143-BC, 13-9490-BC-2, 13-9490-BC-1, 14-0050-BC, 12-8979-BC, 15-0180-BC-1, 15-0180-BC-2, 16-0434-BC-1, 16-0434-BC-2, 16-0434-BC-3, 15-0350-BC, 15-0261-BC-2, 13-9693-BC-2, 16-0522-BC-1, 16-0529-BC, 17-0646-BC-2, 16-0495-BC, 16-0425-BC-1, 16-0425-BC-2, 16-0425-BC-3, 16-0485-BC, 16-0538-DC, 16-0486-BC-1, 13-9693-BC-3, 16-0582-BC, 16-0581-BC, 16-0475-BC-1, 16-0475-BC-2, 15-0351-BC-1, 16-0554-BC-1, 16-0554-BC2, 17-0630-BC, 16-0509-BC, 16-605-BC, 15-0265-BC, 17-0705-BC, 17-0691-BC, 18-0866-BC, 17-0766-BC-1, 17-0766-BC-2, 16-0513-BC-3, 16-0513-BC-2, 17-0697-BC-1, 18-0910-BC, 17-0810-BC

<sup>19</sup> 13-7768-BC, 13-7769-BC, 13-7479-BC, 13-7480-BC, 13-7770-BC, 13-7771-BC, 13-7606-BC, 13-13-7607-BC

the victim for harm resulting from his/her/its misconduct. Specifically, restitution aims to “restore” the victim to the position he/she/it was in before the misconduct occurred. During the material period, COMEX ordered US\$ 5,842,474.99 of disgorgement and restitution, with ICE US following close behind at US\$ 5,220,974.14. Disgorgement and restitution signal to calculative wrongdoers that there is no point in offending because “you’ll pay it all back and then some”, i.e. a fine. Be that as it may, the practice has not caught on at ICE EU or the LME, with no instances of these tools being deployed since the beginning of 2007.

### **7.5 Discussion**

Returning to the research question, the findings exhibit several attributes of the exchanges’ enforcement programmes that increase their effectiveness. To begin with, the detail provided in some notices limits ambiguity (Feldman, 2018). This is also helpful to compliance officers seeking to calibrate monitoring and training programmes. On top of that, this enhances the ability of the exchanges to quickly disseminate messages through harnessing “gossip”, especially as anonymity is not granted to those found guilty of misconduct. This feature also helps entity participants identify “rolling bad apples,” allowing them to decide whether to offer employment or a trading account (if a prospective customer).

Taking thematic action to target specific offences tends to lead to fewer cases exhibiting offending behaviours, at least in the immediate aftermath of a campaign. This could be a testament to the effectiveness of this approach in increasing salience (Hunt, 2023). That said, caution is needed. This could be due to coincidence or a venue having decided to commit its resources elsewhere. The fewer instances of “no shows” in response to enforcement action taken by UK exchanges than those in the US are also “double-edged”. Viewed optimistically, this could indicate a more robust culture of compliance and higher inherent respect for authority amongst the participants of the UK venues. More likely is that the US exchanges are making a more concerted effort to reach indirect participants than their UK counterparts, most notably in the case of COMEX.

In certain respects, the picture concerning the effectiveness of the exchanges’ enforcement programmes is mixed. The likelihood of detection appears to be higher for

certain types of infringement than for others (Feldman, 2018). This is perhaps inevitable. Still, calculative wrongdoers might take cues from what is and what is not pursued. A perception that an exchange is only willing to chase less technical breaches whilst leaving more complex activities unchecked could prove very damaging to the credibility of its enforcement efforts. An example of this would be taking regular action about issues occurring on a trading floor whilst paying less attention to those involving algorithms. Such a perception may also undermine legitimacy, another aspect of exchanges' enforcement operations which, based on the pattern of cases brought since 2007, shows signs of being variable (Feldman, 2018).

There are several properties of the exchange's enforcement campaigns that seem to be less effective.

First, the exchanges studied have sometimes sought to increase salience and deterrence through the use of sizeable monetary penalties, a strategy that Feldman contends is counterproductive (2018). Plus, the use of complex English in enforcement notices may undermine the effect of these "shock and awe" cases among the international community that now constitutes the exchanges' constituency. For Feldman, this would probably be an example of a sub-optimal "one size fits all" method of enforcement.

Second, the lack of a consolidated database of exchange enforcement cases makes it harder for practitioners to identify behavioural trends across markets and borders. Correspondingly, not posting notices in a machine-readable format in the ChatGPT era limits the ability of enforcement messages to reach new audiences, including, potentially, artificial trading agents themselves.

Third, UK exchanges' seeming reluctance or failure to act against indirect participants risks giving this type of user a sense of impunity. For some, this may be viewed as a manifestation of the conflict of interest that dissuades an exchange from disciplining certain types of exchange users lest they decide to take their business elsewhere (Omarova, 2010) (Bradley, 2000). Whether this has a foundation or not, this is liable to frustrate member intermediaries who, despite their best efforts, cannot eliminate all the risks posed by their clients' trading (Culley, 2022). This may be seen as "lazy" enforcement by members. Take, for example, the floor-centric nature of LME's enforcement activity. This may create an impression that the LME does not have the

means to tackle abuses perpetrated by other actors. Fewer cases target new forms of manipulation in the digital era at the UK exchanges, contrary to Slavov (2001). Due to this fact, speculation about the effectiveness of surveillance apparatus is likely to persist (Kellerman, 2021). Similarly, the low proportion of cases brought to volume could create an impression that exchanges are powerless to prevent misconduct (even if most participants are well-behaved!). There is evidence that some participants view some rules as mere “sludge” with limited social utility. All these factors serve to reduce legitimacy/acceptability in the estimation of market participants.

Fourth, the preponderance of minor fines and short-term bans risks reducing some enforcement activities to the level of “parking tickets” in the minds of would-be offenders (Feldman, 2018). Resultantly, such penalties are unlikely to deter future misconduct and may encourage it, building upon Pirrong (1995).

In like manner, the high rate of settlements at the US exchanges studied may foster “conscience washing”, even if it saves time and resources. It is widely commented that criminal justice systems often struggle to process cases involving alleged white-collar misconduct (for example, (Croall, 2004, Larsson, 2007, Kempa, 2010). On that account, settlement may be regarded as one of the best options available to exchanges. It is quicker and cheaper than a contested hearing. Resources saved through a settlement can be promptly allocated elsewhere. For all that, language such as: “Pursuant to an offer of settlement in which [a Person] neither admitted nor denied the Rule violations or factual findings upon which the penalty is based” contributes to the ambiguity of the type Feldman (2018) warns could be counterproductive. Allowing wrongdoers to avoid admitting responsibility for, or being found guilty of, misbehaviour could lead to self-deception. Merely paying a monetary penalty and “moving on” is unlikely to create a strong impetus for self-reflection and lasting behavioural change. If anything, it could trigger feelings of “victimhood” on behalf of the accused, for example: “I only paid the fine to get those bureaucrats out of my life. I want to get on with business. There was nothing inherently wrong with what I did. Everyone else is doing it. They just singled me out.”

Even with settlements, the pace of exchange enforcement can sometimes be surprisingly slow (Tarbert, 2021). This may diminish salience. Coupled with the relatively high rate of

“no-shows” at US exchanges, these facets again raise questions about perceived legitimacy in the remote trading era, contrary to Lee (2000) and Stringham and Chen (2012).

Compared with previous studies' findings, there is limited evidence that the UK exchanges have “outgrown” their regulator. Neither has artificial intelligence entered the enforcement equation yet (Azzutti et al., 2021).

This chapter’s findings must take account of the study’s limitations. At the outset, the exchanges studied are solely based in Anglophone / common law jurisdictions. Exchanges based in civil law jurisdictions or countries with very different cultural and legal traditions, such as China, may utilise different enforcement strategies with greater or lesser success. A comparison between the potentially contrasting approaches of exchanges based on each tradition would make for an exciting avenue of further research to the extent that meaningful access to exchange officials and records can be obtained. Irrespective, at the time of writing, eight of the ten highest-ranked financial centres are Anglophone or partially Anglophone (2023c).

Even the records published by exchanges based in the West are variable. By nature, no two exchanges are 100% “like for like”, even when owned by a joint beneficial owner, as with ICE EU and ICE US. This is expected due to each venue's distinct historical evolution and desire to establish unique selling points. Then again, this creates several challenges for a researcher. For instance, annual volume data for some of the years covered by this study is not publicly available. Where it is available, COMEX, the LME and the ICE markets use different counting conventions, making direct comparisons difficult. The US exchanges also operate consolidated accounts that are less granular than their UK counterparts. Similarly, it is difficult to precisely count the number of cases occurring each year. Many are concluded in a year different to that when an offence occurred. Sometimes, a conclusion is not reached for several years. This makes it tricky to make concrete deductions about behavioural trends. Undoubtedly, this is not ideal for parties accused of wrongdoing either. This situation has previously led the CFTC to criticise COMEX (2014h):

”If problematic behaviour identified in a complaint remains undetected for an extended time and a case is not promptly initiated, case resolution is

ultimately delayed, which makes repeated transgressions more likely to occur.”

The US CFTC publishes such exchange supervisory reports in the public domain, whereas the FCA does not (if it even performs these). None of the limitations represented a significant obstacle to this study.

A range of anomalies between the operations of US and UK exchanges studied for this chapter were identified. These include the:

- greater use of settlement, permanent bans and restitution or disgorgement by US exchanges; and
- the higher “no-show” rates of respondents to US enforcement actions;
- the lack of wash trading and spoofing cases pursued by ICE EU compared to ICE US.

Viewed theoretically, some may view the American willingness to utilise permanent bans as a victory for a more muscular rule over a principles-based regulatory approach. Additionally, it might offer evidence that US FICC markets are far more confident in their ability to withstand regulatory arbitrage than their UK-based counterparts commercially. However, it could equally lend support to the behavioural approach increasingly favoured by regulators in the UK. The enhanced accountability regime introduced by the SMCR may have reinforced messages exchanges have sought to convey to market participants through their enforcement notices. Concerned about the possible long-term implications of exchange non-compliance for their careers, traders on UK exchanges may have been encouraged to make strenuous efforts to avoid even minor infractions. Even if this were true, the US exchanges pursue all errant users of their markets, whether direct or indirect. This offers a credible explanation for the higher “no-show” rates and usage of permanent bans. Many indirect actors sit outside the behavioural ecosystem and norms of an exchange and its host country.



## Chapter 7

Practically, the anomalies offer insights to exchange operators that could be used to refine enforcement initiatives. UK venues could take thematic action targeting potential wash trading and spoofing. Both the LME and ICE EU permit electronic trading via CLOB systems, which are likely to attract these behaviours from time to time. If left unchallenged, this could reduce confidence in UK markets and trigger the reverse of regulatory arbitrage as commercial users seek more robust forums for hedging their risks. Likewise, US venues might consider supplementing their legalistic approach to enforcement with preventative behavioural tools. For example, they could experiment with altering the choice architecture on proprietary and third-party trading applications that connect with their CLOBs. This could help dissuade problem behaviours so that fewer costly enforcement actions are necessary in the first place. In the UK, the FCA has taken a similar initiative in the context of retail investments (2024b). The practical implications of this chapter's findings have informed the following policy recommendations.

First, exchanges could work together to create an international central repository of enforcement actions they have brought. This might be achieved by working with a commercially "neutral" organisation like the Futures Industry Association ("FIA"). Such a repository would be an excellent learning tool, especially if the notices were rendered in plain English per the Flesch-Kincaid scale. It is plausible that this would increase the salience of enforcement notices. A central repository would be invaluable to risk officers conducting horizon scanning of incident trends. It would also reduce friction for compliance and human resource professionals in performing client and staff onboarding checks, i.e. to prevent "rolling bad apples" from re-entering markets. Additionally, if enforcement notices in the repository were machine-readable, they would be accessible to the large language models ("LLMs") set to become a vital component of firms' surveillance and trading architecture.

Second, this chapter recommends that exchanges consider abolishing small fines and bans for extremely short durations. Instead, exchanges are proposed to move to a penalty points system for minor offences. Like systems that penalise driving offences, offenders would face substantial fines and lengthier bans for repeated transgressions. This should help eliminate notions of merely collecting and paying off "parking tickets" and focus on

improving behaviour to avoid penalties that will hurt financially and career-wise. Equally, actors would be rewarded with a “clean slate” if they stayed out of trouble for a sustained period, for example, after two years without an infringement. The LME operates a penalty points system for floor-related breaches that incorporates these features, although this is combined with small fines (2022r). It is submitted that floor-based violations differ from those engaged via digital means in that wrongdoers come face-to-face with exchange surveillance staff daily. This may exert some social pressure to behave appropriately. Still, the value of this has decreased with the continued decline of the floor, especially after its role was further reduced during the COVID-19 pandemic (Burton, 2021). By this, the LME should expand its points system beyond Ring dealing. “Sin bins” could also be introduced for proprietary trading algorithms that repeatedly offend to deny profit-making opportunities.

Third, this chapter suggests that settlements are used cautiously. The US exchanges explored in this study sometimes use restorative justice techniques, principally restitution and disgorgement, which help counteract conscience washing. Restitution is only viable when an identifiable victim of an actor’s misconduct exists. For example, it has been used when an employee has been caught trading ahead of his employer’s orders for the benefit of his personal account (2014f) Such techniques could be complemented by a rule like FCA GEN 6.1.4A, which prohibits entity participants from paying fines levied on their employees for misconduct.

Fourth, this chapter advocates for the UK exchanges to enact an equivalent of COMEX rule 418 and ICE US rule 4.00 to empower them to take direct action against non-members. REC 2.15.3 currently implores UK exchanges to: “where appropriate, enforce its rules against users (other than its members) of its facilities”. Based on the evidence reviewed for this chapter, this has not impacted ICE EU or the LME much. This is unlikely to be sustainable in the digital era.

The Disciplinary Section of ICE EU’s 2023 Regulations states that the exchange may only take disciplinary action against a “Person Subject to the Regulations”. In the trading context, this includes a member, their representatives and staff, a liquidity provider or MiFID II market maker or persons participating in the exchange’s liquidity provider or market maker programmes.

Turning to the LME, the costs of pursuing aggressively misbehaving end clients could explain the introduction of the LME's compromise 'client of concern' protocol. Effective from 1<sup>st</sup> March 2021 (2020d), this enables the LME to "direct Members to take action in respect of clients in certain circumstances". The protocol allows the LME to (a) request information about clients' activities from members and (b) direct members "to cease to trade with a client if necessary, as a tool to prevent market abuse". Staying faithful to the tradition of principal trading, the LME stressed that it "...does not have any direct relationship with clients, and therefore cannot impose sanctions against such clients directly".

In minimising costs to themselves, exchanges could risk being accused of passing them onto members and broader society. Members may feel exchanges have outsourced a significant element of their disciplinary and oversight functions to them. Moreover, facing a lack of official sanction, malfeasant end clients could simply move between brokers. Coincidentally, this hollows out the experience and expertise of exchanges, limiting their utility as a market steward. This is potentially very significant as, post-Brexit, the UK Government has made market-led supervision a core tenet of its *Wholesale Markets Review* (2021am). This is where SupTech could play a pivotal role.

Fifth, exchanges could use HUMANS to help them buy, build and fine-tune SupTech solutions for more effective enforcement. Classed as a subset of RegTech (Barrière, 2021), SupTech refers to technologies which equip regulators to "conduct supervisory work and oversight more effectively and efficiently" (The Basel Committee on Banking Supervision in Magalhães Batista and Ringe (2020)). Thus far, analyses in the burgeoning literature have primarily focused on the potential of SupTech to transform public or national competent authority-level supervisory and enforcement operations (Grassi and Lanfranchi, 2022). However, as "private" regulators, exchanges could take a lead role in encouraging their (at times) tech-shy public counterparts (Anagnostopoulos, 2018) to switch from analogue to more digital approaches to enforcement. In this regard, exchanges could increase the influence of their enforcement actions on the regulatory reform agenda. Applying the HUMANS framework:

- developing a "unique trader identifier" for use across markets (and borders) could increase the **salience** of enforcement actions. Exchanges and members in a

“network” of linked trading venues would use the same identifier for a natural person or algorithm. Each exchange and member in the network would be immediately alerted by SupTech when an exchange in that network had taken enforcement action against a particular identifier. Today, exchanges use their identifiers, for example, Tag 50 for CME Globex, or draw upon those used in general regulations, such as Commission Delegated Regulation (EU) 2017/580. This fragmentation inhibits cross-market surveillance efforts. Exchanges in the network might be competitors in different legal groups and jurisdictions. Nonetheless, using an international trader identifier (“ITI”) could facilitate the easier and quicker “crowdsourcing” of otherwise disparate enforcement efforts. An ITI could function similarly to the internationally recognised legal entity identifier (“LEI”) that currently exists (Wolf, 2022);

- in turn, an ITI could also be used to increase the potency of exchange level sanctions by raising the prospect of cross-market recognition of the outcomes from specific enforcement actions. This way, traders and algorithms found guilty of serious breaches could be barred from trading on any exchange in the network whilst they serve their ban. This would be a severe deterrent to individual market, cross-market and cross-member abuse alike as the prospect of “earning whilst serving” (see the sub-section on “Salience” in the Findings section) would be significantly reduced;
- structuring enforcement notices in a format commonly agreed upon between the exchanges in the network would be helpful to SupTech, which is powered by artificial intelligence. Inspiration could be taken from initiatives such as the European Legislative Identifier for this purpose (Bauerfeind and Di Prima, 2019). This could equip exchange supervisors with more powerful trend data, including the ability to spot conduct risks emerging in other markets which have not yet reached their venues;
- such standardisation could also make enforcement notices more accessible to artificial intelligence-driven translation tools. As machine learning-based

language analytical tools improve, it might be possible for exchanges to retain technical English in the original notices. This is because these tools might be able to translate the original notices into the technical language of the target “tongue”, for example, Chinese. This way, an enforcer might be able to meet the twin goals of precision and ensuring the broadest possible audience understands a notice’s messages; SupTech could help make enforcement processes more **manageable** through the auto calculation and dissemination of penalties, particularly for minor technical infractions (Grassi and Lanfranchi, 2022). This facilitates a more proportionate, risk-based approach (Arner et al., 2017), which could free up tight supervisory and enforcement resources for allocating more complex cases. In addition, this could help to “depersonalise” some enforcement interactions, reducing instances of disrespect and non-cooperation;

- similarly, SupTech could increase the speed at which specific processes are conducted, again making enforcement processes more manageable or avoiding the need for enforcement altogether. For example, artificial intelligence-enabled systems could process position transfer requests with such rapidity that the incentives to rationalise the circumvention of the related rules greatly diminish. In the bargain, this would also help to counter any notions that there is too much data for an exchange to process and that, consequently, avoiding scrutiny is somehow “**normal**”;
- SupTech could bolster the **salience** of enforcement initiatives by making them a permanent or “rolling” feature of exchange trading. Today, thematic action is taken to counter the perceived “big ticket” threats of the day. These risks “fizzle out” as the panic subsides or other issues emerge that demand the reallocation of resources. In contrast to human supervision, SupTech has a more significant potential for “multi-tasking” 24 hours a day, all year round, and
- taken together, these advantages of SupTech could help to counteract the negative impacts associated with the diminution of exchange members as “gatekeepers”. With time, supervision and enforcement should become more

pervasive features of technical market structure. As businesses and platforms fragment and new social and technological practices emerge (Walker, 2021), some argue that deeply embedded SupTech will be essential to meet the challenges posed by this paradigm shift (Arner et al., 2017).

### **7.6 Conclusion**

Since 2000, humans have gradually diminished as the public “face” of exchange trading as floors have closed in favour of digital-centric means of price discovery. Aggregation, matching and trading algorithms power interactions in a modern trading venue. Yet, human behaviour continues to shape the conduct of trading “behind the scenes”. Humans design and calibrate algorithms, decide who to give permission to DEA, and manually place orders using remote trading applications. In recognition of this fact, this chapter has attempted to shift the examination of exchange enforcement from a purely legal to a behavioural lens using HUMANS and insights from Feldman. Employing this approach, this chapter concludes that the effectiveness of enforcement efforts at the four derivatives exchanges studied is a mixed picture.

From one perspective, the exchanges have recognised that their constituencies have shifted in the era of electronic trading. This has seen COMEX and ICE US extend their jurisdictions over the trading of non-member participants; the LME places more attention on their members’ supervision of DEA activities and thematic enforcement operations targeting specific clusters of misconduct, thereby signalling an increased likelihood of detection. From an alternative perspective, the jurisdiction of ICE EU’s and LME’s rulebooks have been sluggish in reacting to the new realities of non-member participant-directed trading, possibly creating a sense of immunity amongst this constituency. Enforcement notices written in complex English and posted fragmented, in the case of the LME member only; locations may inadvertently contribute to ignorance. This is suboptimal in an era where concerns about cross-market manipulation are rife, and many indirect participants will not have a native-level command of English. The continued use of small fines, short-term bans and settlements that allow the accused to continue denying wrongdoing is probably counterproductive. Possibly fuelling contempt for the potency of exchanges’ enforcement mechanisms, their effect is further

## Chapter 7

undermined by the lack of a prohibition on firms paying fines imposed on their employees. To the extent that exchange participation is still considered valuable, only the prospect of permanent or extended exclusion may be appropriate for the most egregious offences. UK venues have appeared reluctant to emulate their US counterparts in this respect. This is another significant anomaly in the era of the globalised marketplace. The prospect of recovering fines from abusive actors based in third countries may be very remote indeed. Even as we move from the digital to artificial intelligence era, exchange enforcement still requires a human touch to be effective.

## Chapter 8 Conclusion

*“Automation of financial markets...through...the use of algorithmic trading, is a force that is core to the business model of many firms. The benefits are in execution, speed, and most importantly, cost reduction, it fewer staff needed to execution transactions and achieve greater market share and penetration.”*

**(ENGLER ET AL., 2018)**

The works compiled in this thesis reveal that the practical consequences of transforming the UK FICC into algorithmic realms for managing conduct risk are multifaceted. At once, these consequences can be observed both directly and indirectly. The sublime occasionally triggers consequences. More often, though, seemingly mundane developments are more consequential. In certain respects, the FICC markets present distinctive challenges for managing conduct risk in automated markets. In other respects, they appear indistinguishable from the securities markets in which automation was pioneered. A core aim of this conclusion is to identify consequences, or themes, that cut across the preceding chapters to answer the overarching research question. This is supplemented by an analysis of (i) the thesis’s overall contribution to knowledge, (ii) its strengths and limitations, (iii) some recommendations for practice and future research, and (iv) some final remarks.

### 8.1 Cross-cutting themes

To focus this section, it is helpful to return to this thesis’s research question:

*What are the practical consequences of the transformation of the UK FICC markets into algorithmic realms for the management of conduct risk?*

Chapter One introduces the components or “levels” of a typical conduct risk management programme. These were used loosely in **Table 1.1** to highlight which of the thesis’s chapters address them. In alphabetical order, these include:



- Culture
- Detection
- Deterrence
- Goal setting
- Governance
- Measuring
- Operating model
- Punishment
- Reporting
- Risk taxonomy
- “Tone from the top”
- Transparency

Each level represents ideal themes to formulate general conclusions about the practical consequences of transforming the UK FICC markets into algorithmic realms for managing conduct risk.

### 8.1.1 Culture

Culturally, most investment firms think of themselves as traditional brokerages first and AT firms a distant second. The exceptions are the newer electronic market makers and quantitative fund managers. None of this is surprising. Many employees of traditional brokerages are ex-floor traders, especially in senior ranks. Comparatively, many electronic market makers and quantitative hedge funds pride themselves on recruiting scientists and IT experts. Before now, self-identification's impact on firms' management of conduct risk was less pronounced.

First, if a firm did not create an algorithm itself, its staff are more likely to believe that they are somehow less responsible for the behaviour or performance of the algorithm. A firm and its staff might be legally accountable for an algorithm's behaviour. If an algorithm is someone else's conception, it is not difficult to adopt a psychological stance that responsibility for its conduct lies elsewhere. Practically, this could lead some to “drop

their guard” and implement requirements prescribed by RTS 6 with less intensity in the belief that “someone else is taking care of it”.

Second, this could explain why the mention of conduct risks relating to AT was almost absent from the firm’s value statements. This, too, helps to create psychological conditions conducive to deprioritising or “window dressing” the implementation of systems and controls designed to mitigate AT-related conduct risk.

Third, some “traditional” brokerages are willing to withdraw or scale back their electronic platform, offering to communicate to their customer base that they *are* different and, perhaps, ethically superior to digital challengers. The inference is that the “new” represents a threat: “those pesky algo firms are more likely to front run your orders than our benevolent intermediaries” runs this logic. Viewed from another perspective, firms with shrunken trading desks are less likely to sustain the uncouth and emotional behaviour for which human dealers in FICC markets are, fairly or unfairly, notorious.

Fourth, such partisan claims of moral superiority are becoming increasingly irrelevant. The cultural influence of new and old intermediaries continues to wane as the proliferation of DEA continues to accelerate. This is creating a significant headache for trading venues. The potency of some levers in an exchange’s enforcement toolkit is inevitably reduced as the origin of misconduct transcends borders. Many jurisdictions still do not operate personal accountability regimes in their systems of financial regulation. Trading communities are more likely to be scattered, reducing the impact of peer pressure exerted by other market participants feeling aggrieved at conduct seen as unfair, including deploying algorithms in a disruptive manner (a common complaint). Sensing that they might be out of reach legally and reputationally, remote actors may feel encouraged to misbehave or experiment using algorithms. In-kind exchanges may feel compelled to use ever more “blunter” instruments to force cultural change (see (iii), below).

### 8.1.2 Detection

MiFID II insists that firms implement real-time monitoring to help identify misconduct by algorithms, particularly disruptive trading practices that might result from negligent or erroneous deployment. However, weary from almost a decade of intense and rapid

regulatory change, many professionals are still sceptical about the value of surveillance conducted in real-time. Much confusion exists about what real-time monitoring seeks to achieve, particularly in “manual” or “execution” algorithmic trading contexts. This is an area of regulation that is ripe for reconsideration. Relieved from a formal and expensive burden that is achieving little “buy-in”, practitioners at “traditional” investment firms may reallocate their resources to counter issues of the type that consistently pose a headache to trading venues (and, by extension, other market participants). Good examples include detecting out-of-date client identifier information and trading activities that radically diverge from stated aims.

Besides technological limitations, a relatively low knowledge base threatens to undermine traditional investment firms’ efforts to detect potential misconduct involving algorithms. This creates a conflict of interest in conducting risk management. Control function staff depend on the knowledge and cooperation of front office staff, IT functions, and clients to interpret events that could constitute misconduct.

Irrespective of the limitations in firms’ detection efforts, trading venues rely heavily on them to police their rules and norms. Whilst a degree of reliance, or more aptly, partnership, is necessary, investment firms suffer from a significant vulnerability only trading venues can mitigate: a blind spot to cross-firm manipulation. Plenty of literature has been written about cross-market manipulation in the AT-related literature, especially in the context of securities markets, which experience high levels of fragmentation. To the best of the author’s knowledge, little has previously been written about cross-firm manipulation outside consideration of abusive squeezes, i.e. where an actor engages in manipulative behaviour through trading accounts held at several firms, believing that this reduces the chances of being detected. For example, one could layer an order book using an account held at one firm and then spoof it through an account held at another firm. In FICC markets cross firm manipulation is a more severe threat than cross-market manipulation because there is less liquidity fragmentation. In this sense, trading venues need to employ a surveillance function which is as good, if not better, than anything an investment firm can put together.

One way trading venues have sought to signal to would-be violators that they run a high risk of being caught is by punishing “low-level” infractions frequently.

### 8.1.3 Punishment and deterrence

The US trading venues examined for this thesis are particularly prolific in penalising record-keeping and client identifier-related offences. They are also keener to use sizeable fines and lengthier or permanent bans than their UK-based counterparts. This is of great assistance to compliance officers. Naturally, the related enforcement notices are an excellent resource for training clients and staff members about expected standards of conduct. More than this, if used skilfully, these can also help firms identify potential “problem” hires, strategies, and prospective clients. Considering the technical limitations that firms’ in-house control functions often suffer in providing oversight to AT-related activities, this is a welcome contribution to risk management. Yet, the usefulness of exchanges’ enforcement efforts is limited by assorted weaknesses.

To start with, their accessibility is reduced by the (i) absence of a comprehensive cross-venue database of enforcement notices, (ii) frequent use of more complex English, and (iii), in some cases, a lack of detail. As trading becomes more technical, even seemingly minor details such as these can make a big difference to the success of a conduct risk management programme. More serious are the (i) significant inconsistencies in activities being pursued by US and UK venues for comparable products, (ii) the overuse of settlements, (iii) lack of direct intervention by UK venue against bad behaviour perpetrated by non-members, and (iv) issuance of fines so small or bans so limited in duration that they are inconsequential. These drawbacks risk nurturing an air of impunity. A combination of permanent bans and heavy fines has been used by venues to “up the ante”, especially in the US. However, UK venues have been less eager to issue permanent bans.

Complimenting official exchange-led enforcement programmes is the unofficial mechanism by which investment firms punish AT-related misconduct. These include: (i) declining to onboard a prospective client whose reputation (because of previous disciplinary history) or proposed AT trading strategy does not suit a firm’s risk appetite; (ii) refusing to offer or withdraw DEA service provision to a client for similar reasons; or (iii) at desk level, refusing to offer to, or seek liquidity from, another market participant citing alleged unfairness of their AT strategy(ies). Regulators are keen for firms to filter out “rolling bad apples” because this is quicker and cheaper than formal enforcement.

Although informal approaches suffer from a lack of due process, an issue highlighted by the wider de-banking scandal in the UK.

Insofar as firm value statements are concerned, little specifically seeks to deter AT-related misconduct. This is probably because most firms examined still view misconduct primarily in legalistic terms, leaving legislators and regulators to “set the agenda.”

### 8.1.4 Goal setting

Setting goals to mitigate conduct risks associated with the conduct of AT in FICC markets is almost exclusively driven by regulations such as RTS 6 and enforcement action taken by trading venues. For example, trading venues often conduct “campaigns” where specific forms of algorithmic-related misconduct are targeted, such as failing to retain an adequate audit trail about electronic trading activities. This is designed to “pace set” other market participants into reviewing and strengthening their systems and controls. Such zeal is not shared by investment firms themselves. This can be inferred by the lack of reference to AT in the firm’s public statements or privately held views concerning perceived conduct risks and initiatives to address them. This scarcity of organic or “bottom-up” goal setting potentially threatens to compromise regulators’ initiatives to counter conduct risk associated with AT. Firms’ representatives may view goals set by outsiders as being contrived and, therefore, devoid of legitimacy.

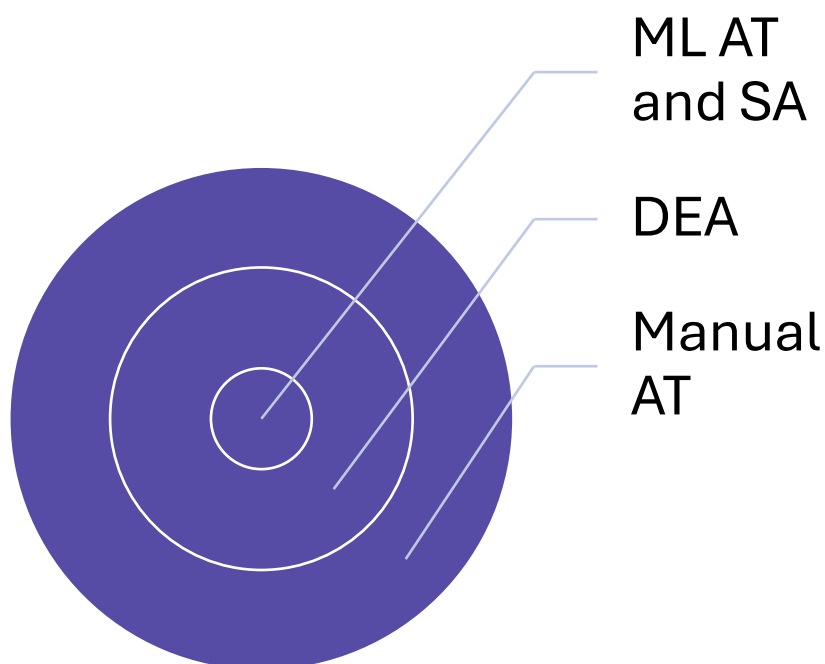
### 8.1.5 Governance

SMCR and RTS 6 “hardwire” certain governance expectations of UK investment firms involved in AT. This is supplemented by regulatory guidance such as that issued by the FCA (2018b). These elements rely very heavily on the “formal” organisation. This comprises accountability structures, defining procedures around development, deployment, testing and escalation, provision of regular management information, separation of responsibilities, and annual self-assessment. Those interviewed for this thesis referenced the existence of these building blocks in conversation. Unfortunately, there was no way for the author to test their effectiveness in managing conduct risk through the research methods used. Formal governance arrangements are rarely

foolproof, a point emphasised by the findings of many exchange enforcement cases reviewed for Chapter Four.

Worthy of note is the evolution in informal governance's role in managing conduct risks posed by AT undertaken or facilitated by investment firms. De facto (if not legal) responsibility for algorithmic deployment is increasingly being shared between new communities of practice, including internal developers, broking and trading teams, external vendors and clients. In places, it has been observed in the evidence collected for this thesis that these parties place varying degrees of reliance on one another. This is liable to give rise to unofficial decision-making, such as what algorithms to deploy, how to calibrate and recalibrate them, who to allocate platforms to and who to switch off. The old certainties about decisions being taken by certain role holders at specific times, for example, by a head dealer on a trading floor, are gradually eroding. Investment firms' customs and internal decisions are of limited significance to end-user participants unless they are concerned about their whole or part exclusion from trading activities. A “floor walk” by a senior manager inside an investment firm, a typical means of conveying “authority” through physical presence, is invisible to these end users. Equally invisible to such senior managers are the now globally dispersed social networks that accompany the new communities of practice. The cultural norms that ensue from these shadow structures are, therefore, likely to be as, or possibly more, significant in determining how algorithms are harnessed as society moves deeper into the Fourth Industrial Revolution (Schwab, 2017).

## 8.1.6 Operating model

**Figure 8.1** *Visualisation of the FICC futures market as an algorithmic realm*

**Figure 8.1** provides an overview of the operating model typical of a sell-side investment firm active in future markets specialising in FICC products. Since their introduction, sell-side firms have mainly used algorithms as “tools” rather than “brains”. This remains the case even though ML AT has gained popularity amongst a small group of electronic market makers (sell-side) and quantitative hedge funds (buy-side). More pivotal than “robo trading” has been the combination of (usually) manual AT with DEA. Exchanges, firms, and third-party ISVs compete to offer ever more efficient trading tools. Added to this is the proliferation of API access, which allows the creation of their tools, albeit mainly through DEA rather than SA channels. Most sell-side firms remain reluctant to “cede” direct control over clients’ activities, at least concerning setting and monitoring risk limits.

The practical consequences of these evolutions in market infrastructure for managing conduct risk are twofold.

First, lower levels of intermediation currently represent a greater conduct risk than the deployment of AI. The “dehumanisation” of trading is occurring, but not quite in the manner envisaged by the prophets of ML. Sell-side investment firms may still act as the

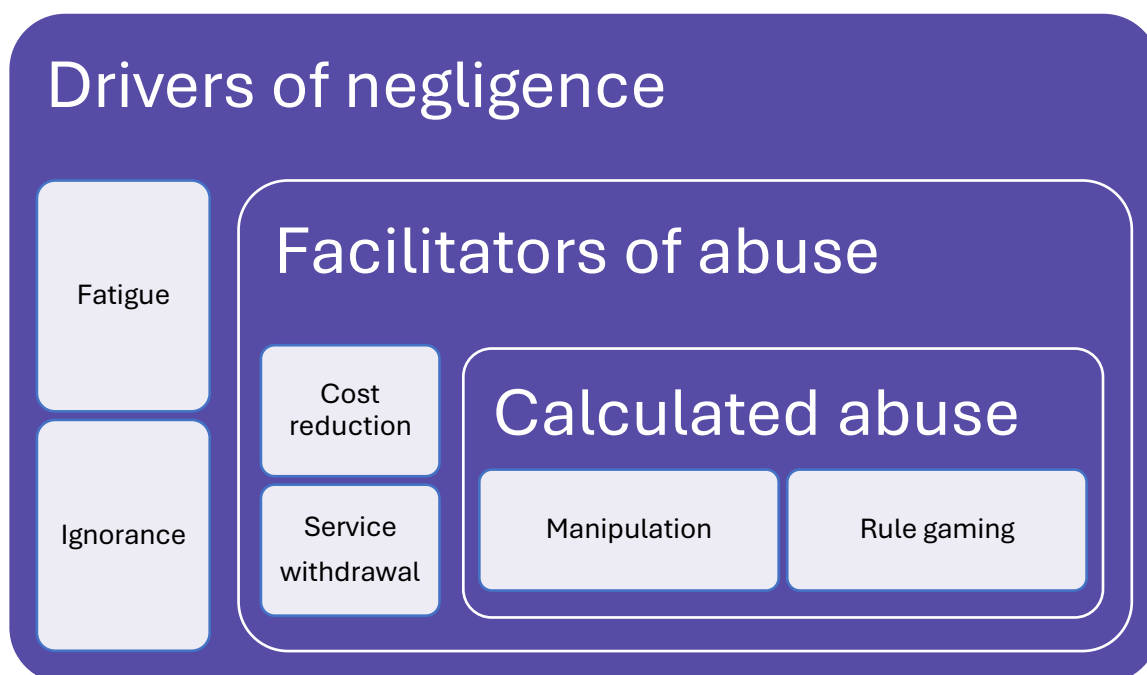
first line of defence against the perpetration of misconduct in regulated markets. Irrespective, with orders no longer exclusively flowing through brokers, the defensive line has, except for applying some “hard” pre-trade limits, shifted to become ex-poste in nature. Pre-trade limits are liable to be set generously so as not to “inconvenience” clients and lack nuance. Surveillance staff may be ill-equipped to scrutinise alerts because of experience, lack of AT knowledge or time. Coupled with a need to seek explanations from clients for unusual trading patterns carefully, some will mourn the loss of the “filter” that broker-intermediated trading offered.

Second, today, market infrastructure is shaped as much from the “bottom-up” as the “top-down”. Futures markets are generally less fragmented than their equities equivalents. Resultantly, investment firms have almost as much, if not more, incentive to compete on their technological offering than on execution price. This is positive in fostering innovation but could entice firms to (i) entertain untested AT strategies or (ii) onboard more DEA clients than they are capable of meaningfully overseeing. This is a far cry from the pre-demutualisation days when brokerages had limited impetus to evolve trading technology. Without a doubt, relieved of the burden of complying with RTS 6 and exchange rulebooks, firms are much more laissez-faire about how their clients trade in OTC FICC markets. Even a senior manager of an FX MTF covered in Chapter One of this thesis said that the venue views conduct as primarily a matter for its participants. This type of outlook underscores that concern about conduct risk is not necessarily intrinsic.

### 8.1.7 Risk taxonomy

Drawing from each chapter’s findings, the author has created the AT conduct risk taxonomy in **Figure 8.2** below.



**Figure 8.2** *AT conduct risk taxonomy*

Aside from service withdrawal, this conclusion touches upon these elements. Service withdrawal is when a sell-side investment firm stops providing an amenity to “de-risk”. For example, ceasing to offer DEA to placate specific clients who fear its misuse by speculators employing algorithms. Equally, a firm might decline to provide DEA because it lacks confidence in managing associated conduct risks. This type of de-risking has negative connotations for the management of conduct risk. It encourages more participants to take certain services, such as DEA, at fewer sell-side firms. Inevitably, this stretches the monitoring capabilities of these sell-side firms, increasing the risk that poor behaviour goes undetected.

Firms can use this taxonomy to help calibrate their risk registers to ensure comprehensive coverage of AT-related risks.

#### 8.1.8 “Tone from the top”

AT is currently not understood by senior management at UK investment firms to pose serious conduct risks. This view is shared by middle managers, who are essential in shaping the “tone from within” investment firms. This is demonstrated by the absence of reference to algorithms or, more broadly, technology in firms’ public statements that

articulate values and expected standards of behaviour. Potential explanations for this include (i) a lack of technological specialists in firms' middle and senior management levels, (ii) a heavy reliance on third-party software vendors for the creation and maintenance of trading platforms which embed algorithms, or (iii) a perception that "classical" misbehaviour perpetrated by unruly brokers or traders continues to be a bigger problem.

Whatever is communicated by investment firms' public statements, the ability of "tone from the top" to influence behaviours arguably declines as non-market member participants engage in higher levels of self-directed trading using DEA. Accordingly, US trading venues have sought to fill the void by adopting a robust stance against misconduct perpetrated by non-member actors. This has led to several high-profile cases against persons deploying algorithms in systematic attempts to commit breaches such as layering, spoofing, or wash trading. Constrained by their rulebooks or fearing a loss of revenue, UK trading venues have so far been reluctant to set such a robust tone. Instead, they have preferred sanctioning their members for "process" breaches and "lower level" dealing infringements. This approach risks creating (i) moral hazard insofar as non-members' trading using DEA is concerned and (ii) resentment and ridicule in the ranks of member firms. A sentiment may develop within member firms that UK exchanges cannot tackle more severe breaches involving proprietary algorithms deployed by non-members, so choose to focus on the "low-hanging fruit" that is a member's systems and controls instead. This could damage morale and, by extension, undermine firms' efforts to comply with regulatory initiatives such as RTS 6.

### **8.1.9 Transparency, measurement, and reporting**

Transparency in algorithmic trading is currently delivered through:

- a requirement to notify regulators of an intent to engage in AT and provide DEA;
- firm-specific registers of algorithms, where these are being maintained;

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- electronic trading audit trail logs maintained by investment firms and trading venues, including the use of specific “tags” to denote that decisions to invest and execute were made by an algorithm;
- the results of conformance testing performed by ISVs and market participants to meet trading venues’ standards;
- firms’ records of pre-deployment and recalibration testing of specific algorithms;
- transaction reporting to regulators by investment firms (when trading in products that are traded on an EU or UK trading venue);
- in the UK, certifying and registering in the FCA’s Directory people influential in the deployment of algorithmic trading and
- internal surveillance and monitoring efforts, including compiling an annual assessment and self-validation.

Practically, the insights generated by this thesis reveal that these tools have had mixed success in helping firms, trading venues and regulators manage conduct risk. This arises from:

- inconsistent approaches, e.g. to maintaining registers of algorithms;
- lack of buy-in, e.g. because of the perceived indiscriminate nature of some provisions or limited cost benefits of complex requirements like real-time surveillance;
- lack of awareness, e.g. of the lessons learned from enforcement action taken by exchanges;

- fatigue, e.g. from balancing competing priorities, eventually resulting in complying with requirements with less intensity;
- accidental omission, e.g. permitting a DEA client to trade in new products using an AT strategy without first assessing the rationale for this;
- gaming, e.g. a DEA participant conducting a layering a spoofing strategy across multiple brokerages in the knowledge that this would frustrate surveillance efforts or a brokerage implementing specific requirements of RTS 6 in a very rudimentary way in the belief that its activities are systemically insignificant, enabling it to “stay under the radar” and avoid unwelcome expenditure; and
- overconfidence, e.g. if manually calibrated execution-only algorithms inherently pose no or limited risk, or that an exchange or regulator would not be able to detect “minor” breaches and, even if they did, that any punishment would be trivial.

### **8.2 Contribution to knowledge**

This thesis makes three key contributions to knowledge.

First, it broadens the relatively immature literature on conduct risk to shed light on its management in non-banking institutions. Before now, the few papers explicitly seeking to generate insights concerning the management of conduct risk had largely been written in the banking context. This is understandable because of all the hostile attention bankers received after the 2007-08 financial crisis. That said, there is considerable value in branching out to study conduct risk in other financial institutions. Many core axioms of traditional investment banking are confronting a formidable test from smaller financial institutions, new and old (Walker et al., 2023). Smaller players are becoming increasingly decentralised, experimenting with new products and, in some cases, operating beyond the reach of national regulators. Usually shunning “corporate” culture, the quality of these institutions’ control environments is highly variable. This matter is of increasing

concern to regulators because, collectively, these institutions are systemically important. By nudging the study of conduct risk into the non-bank domain, it is submitted that this body of work contributes to addressing this concern.

Second, this thesis elevates awareness of how conduct risks manifest in AT environments. Through high exposure obtained after the 2010 Flash Crash, abusive behaviours such as layering and spoofing, quote stuffing and front running achieved notoriety even outside trading circles. This thesis offers evidence that less “glamorous” or “obvious” conduct risks have the potential to be equally harmful. For example, many papers have debated whether spoofing is legitimate deception or illegal manipulation. None had shed light on how ignorance, overconfidence, fatigue, resentment, and remoteness play as, if not a more, important role in shaping conduct in algorithmic realms. Plus ça change.

Third, to the best of the author’s knowledge, chapters five and six of this thesis represent a first attempt, using qualitative data, to examine how firms have sought to comply with the obligations introduced by MiFID II that govern the conduct of AT. This is timely. Legislators and regulators in the EU and UK are currently reviewing the effectiveness of the rulebook in dealing with the conduct of investment businesses. This is ascribable to Brexit and technological developments. There is a possibility that legislators and regulators will consult the published versions of the works that comprise this thesis whilst deliberating. For its part, the FCA has already announced that it plans to appraise UK firms’ AT systems and controls (2023h).

### **8.3 Strengths and weaknesses of the contributing chapters (papers)**

Revisiting the criteria laid down in Patton (2015) for assessing the quality of academic research, the author sees the following to be strengths of this thesis:

- a large proportion of the thesis has already been published and is generating significant interest amongst the practitioner and academic communities. For example, on 18<sup>th</sup> August 2023, the financial services information provider GRIP approached the author requesting to publish a piece on its platform referencing chapters six and seven of this thesis (in their published forms)(Culley, 2023a).

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Furthermore, the published papers have already received a lot of “reads” according to Research Gate (chapters two, three and four) and Emerald Publishing’s platform (chapters six and seven). As of 5<sup>th</sup> November 2023, the number of reads each chapter (paper) had received was as follows:

- Chapter Two (published August 2020): 53
  - chapter three (published March 2021): 26, citations (all sources): 1
  - chapter four (published September 2023): 5
  - chapter six (published June 2023): 3 [Research Gate], 248 [Emerald Publishing]
  - chapter seven (published August 2022): 2 [Research Gate], 116 [Emerald Publishing] citations (all sources): 2
- the thesis has actively involved the target audience (interviewees at investment firms, their service providers, and regulators) and has generated findings / “lessons learned” that the author believes will be helpful to this audience;
  - a diversity of perspectives was obtained from the target audience;
  - the papers are aligned/situated within current regulatory initiatives, increasing the chance that their findings are referred to in practice;
  - the thesis employs research methods that offer a counterbalance to the statistical methods, which have tended to predominate in much financial-related research and
  - the research project was ambitious. For example, scrutinising nearly 800 enforcement notices to find meaning when these are sometimes light on detail

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was incredibly challenging. This required adopting a novel approach (use of Hunt's (2023) HUMANS) to generate findings.

Any substantial body of research suffers from limitations. This thesis is no exception. The author considers this thesis's limitations to include:

- an Anglophone focus in a globalised world;
- where a chapter draws upon data collected from semi-structured interviews:
  - the findings generated are primarily limited to participants' insights;
  - there was a higher level of participation from sell-side investment firms, as opposed to, say, buy-side institutions;
  - content was highly variable in richness/quality; some topics drew more comment than others;
  - the author had had a professional relationship with some participants; and
- one can only glean limited insights into “what actually happens” in an organisational setting from reviewing interview data and published materials. To obtain such insights, one would need to employ ethnographic techniques like those used in (Zaloom, 2006).

Where possible, the author took steps to mitigate these limitations, as described in the chapters themselves. Nevertheless, one can never eliminate such constraints. As such, listing them here might serve as a launch pad for academics and practitioners to conduct further research in this field.

## 8.4 Recommendations for practice

This thesis has made a range of recommendations for practice. To recap, these are listed below:

- the piloting of a “rogue trainer” initiative which draws upon the experiences of those liable for conduct breaches to deliver highly impactful training;
- directing that critical persons in AT deployment complete compulsory AT-related qualifications in a similar manner to, for example, investment advisers;
- pointed modifications to the existing rules in RTS 6 and introduced an RSV regime to reduce process and focus resources on riskier AT models. It is acknowledged that a service company regime currently exists, but this is extremely limited in scope is a “light touch regime” (2004) and, according to many practitioners, is “not widely understood” (2023l);
- revising Miles’s definition of conduct risk to reflect the importance of DEA clients in ensuring fairness in algorithmic markets;
- amend Article 25 of CDR 2017/589 to require that firms formally appraise their clients’ understanding of conduct risks arising from AT, collecting evidence of completion of appropriate electronic learning courses;
- the creation of an international repository of enforcement actions, perhaps led by an industry association such as the FIA, to make it easier for market participants to learn lessons from poor conduct, identify trends, and screen out electronic “rolling bad apples”;
- composing enforcement notices in the plainest English possible so they are accessible to the broadest audience;



- the empowerment of UK trading venues specialising in FICC products to take direct action against end-user clients when they are suspected of foul play;
- the replacement of minor exchange fines and bans with a penalty points system. This could ultimately result in the imposition of more substantial penalties for offenders;
- the “sin binning” of misbehaving proprietary algorithms by trading venues;
- prohibiting legal entities from paying fines levied against their employees or representatives by trading venues; and
- taking a more conservative approach to using settlements to limit the scope for “conscience washing”.

### **8.4 Recommendations for future research**

An assortment of recommendations for future research have been made in the chapters that make up this thesis, including:

- using ethnographic techniques to investigate, in greater depth, the culture of investment firms involved in computer-based trading;
- inquiring whether certain types of market abuse could be extinguished by machines regulating machines;
- examining the effectiveness of pre-and post-trade controls implemented to comply with RTS 6 using accurate, albeit anonymised, trading data;
- comparing the maturity of systems and controls to comply with RTS 6 throughout the EEA to test for possible variations in firm-level implementation;
- exploring the impact that the PRA’s Supervisory Statement SS5/18 (2018a) has had on investment banks’ efforts to comply with the requirements in RTS 6 and

then comparing the subsequent findings to those made about the AT activities of investment firms in this thesis; and

- contrasting approaches of Anglophone and non-Anglophone exchanges in regulating conduct on digital venues.

### 8.5 Final remarks

So, has all the financial, temporal, and emotional investment in the regulatory changes that followed the 2007-08 financial crisis and 2010 Flash Crash to mitigate conduct risk in algorithmic FICC markets been worth the effort? On balance, the author argues that it has not.

Talk of flash boys and arms races inspired the likes of MiFID II and the associated clampdowns by regulators and trading venues on the sensed inequity wrought by AT. Outrage at “bankers behaving badly” instigated a crusade in the Anglosphere to “clean up” the financial services industry. In some areas, these missions fused and absorbed some of the broader anxieties about a looming loss of control attributable to emerging AI technologies. Amidst this hype cycle, personnel at non-bank investment firms had to wrestle with “new” concepts such as “conduct risk”, “behavioural science”, and scores of new regulations.

To many in non-bank investment firms, the decade or so that has passed since the Flash Crash has been a disorientating experience. Contrary to a large body of popular opinion, most FICC markets do not resemble casinos. With a few exceptions, the participants in these markets are not “flash boys” but “mundane men” (they are usually men). Silicon Valley-style “whiz kids” are notable by their absence from most UK investment firms, again with some exceptions. Financial or commercial trading experts still predominate over “techies” at all levels of these businesses. Algorithms are primarily treated as “tools” rather than “brains”. In the minds of many professionals who work for these firms, a strong connection is still maintained with the “real” economy.

Considering the characteristics above, managing conduct risk in algorithmic FICC realms through measures that, in some areas, lack the nuance to distinguish between flash boys

## Chapter 8

and mundane men is suboptimal. Firms employing mundane business models collectively amount to a systemically essential but often overlooked constituency in the financial markets. Piling on broad brush regulations and “faddy” cultural schemes risks alienating this community. Paradoxically, this distracts attention from the few actors deploying complex algorithms, including DEA clients who may presume they are beyond reproach when dealing with UK firms. In the worst-case scenario, faced with excessive costs, mundane actors could withdraw from the market or not seek to enter it in the first place. This is why this thesis’s recommendations are modest and practical.

Effectively managing conduct risk in today’s algorithmic FICC markets requires precision wiring, not flashy optics.

**Word count (excluding references and appendices): 59.730**



## **Appendix A: Information letter and consent form for participants (Interview)**

### **Identifying and mitigating conduct risks in algorithmic fixed income, currency, and commodity (“FICC”) markets**

#### **Consent Form for Research Participants (ERGO ID Number 63013)**

I am Alexander Culley, a doctoral Researcher at the University of Southampton. I am requesting your participation in a study regarding the identification and mitigation of conduct risks in algorithmic fixed income, currency, and commodity (“FICC”) markets. You are asked to participate in an interview with me, which should last approximately 45minutes - 1 hour. Personal information will not be released or viewed by anyone other than researchers involved in this project.

Any information you give will be kept completely confidential and in no cases will responses from individual participants be identified. The study involves no risk to participants beyond the level of risk encountered in daily life. There may be no direct benefit to you other than the sense of helping the public at large and contributing to knowledge.

The interview will be done online (via a recorded Zoom, Microsoft Teams, or Skype session) or a recorded face-to-face meeting if allowed. Participants will receive no credit or monetary compensation. Participation is voluntary. You may withdraw from the study at any time.

The results of the study will be written up for submission as a part of the Researcher’s doctoral thesis. The Researcher will attempt to secure publication of the results in academic journals or discussion papers.

If participants have further questions about this study, they may contact the Researcher, Alexander Culley at [a.c.culley@soton.ac.uk](mailto:a.c.culley@soton.ac.uk).

If participants have further questions about their rights or if they wish to lodge a complaint or concern, they may contact Head of Research Governance, Research Governance Office, University of Southampton, Southampton, SO17 1BJ. (Phone: 02380 595058, Email: [rgoinfo@soton.ac.uk](mailto:rgoinfo@soton.ac.uk))

## Appendix A

Please tick (check) the boxes to indicate that you consent to taking part in this study.

I agree to take part in this research project and agree for my data to be used for the purpose of this study.	
I understand my participation is voluntary and I may withdraw at any time for any reason without my participation rights being affected.	
I understand that the interview will be recorded using audio, video and/ or written notes. I understand that any audio or video recordings will be transcribed.	

Name of participant (print name)

.....

Signature of participant.....

Date.....

ALEXANDER CONRAD CULLEY (Researcher)

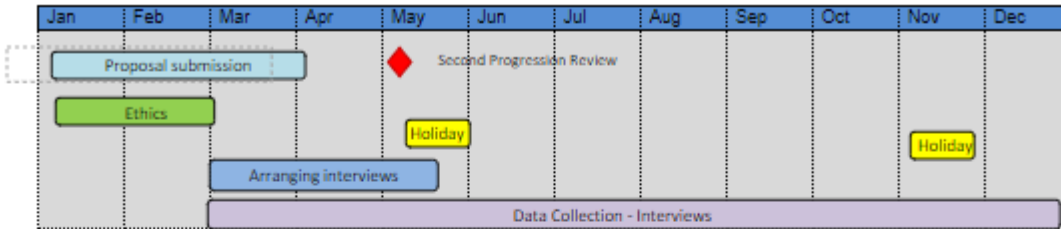
Signature of researcher .....

Date.....

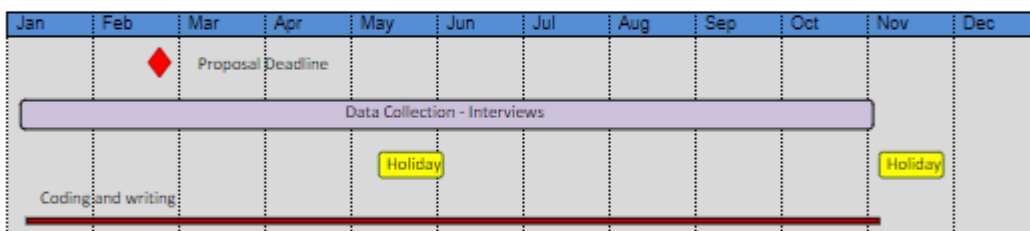
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## Appendix B: Indicative timetable

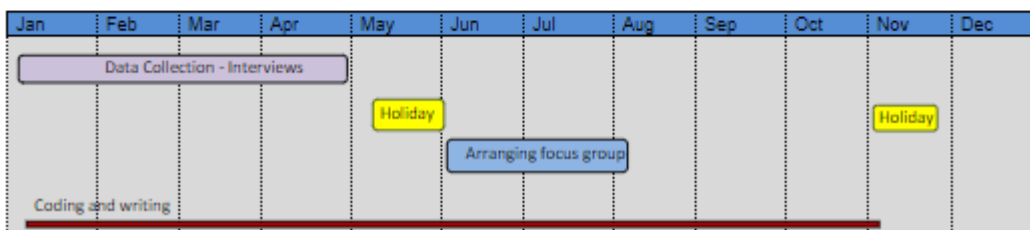
2021



2022



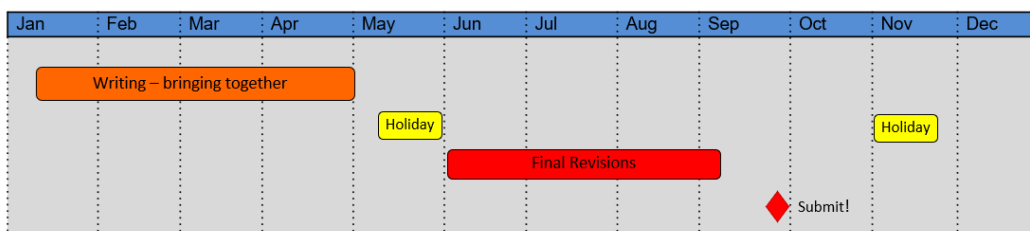
2023



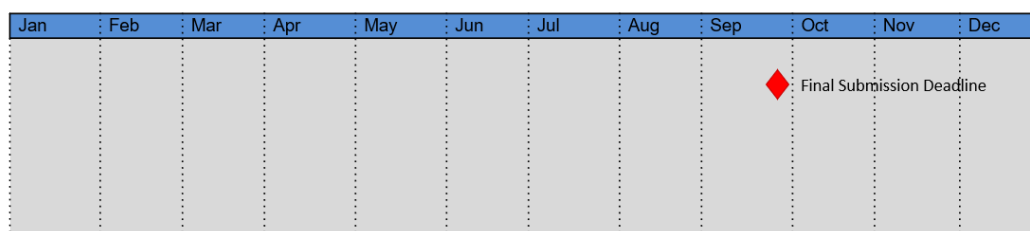
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2024



2025



## Appendix C: Risk register

Risk type	Risk	Inherent level	Steps taken to mitigate	Residual level
Financial	Not enough money to pay course fees	Low  In stable employment at a company with a strong balance sheet	<ul style="list-style-type: none"> <li>Significant savings to cover course fees</li> <li>Could apply for a loan in worst case scenario</li> </ul>	Low
Health	Become ill, e.g. owing to COVID-19, studies interrupted	Medium  General health good, but risk of becoming infected in pandemic	<ul style="list-style-type: none"> <li>Maintain a fitness regime, try to achieve 10,000 steps a day</li> </ul>	Medium
Health	Suffer from burn out owing to combined work, home, and study pressures	High  Employed in a high stress industry, baby recently born	<ul style="list-style-type: none"> <li>Planned holidays in schedule</li> <li>“Little but often” working style to ensure a balanced day</li> </ul>	Medium
Research	Difficulties in securing enough interview participants	Medium  Target interviewees have busy schedules	<ul style="list-style-type: none"> <li>Lots of contacts in market, easy to find replacements</li> </ul>	Low
Research	Interview participant withdraws at an advanced stage of writing or research	Medium  Participant becomes nervous, fears being recognised by peers	<ul style="list-style-type: none"> <li>Anonymisation of participants</li> <li>Offer of non-disclosure agreements if desired</li> <li>Identification of wide pool of potential interviewees</li> </ul>	Low



Appendix C

			to ensure cover	
Data security	Loss of data or data protection incident	Low No sensitive personal data to be collected, unlikely to collect extremely sensitive commercial data, e.g. source codes for trading algorithms	<ul style="list-style-type: none"> <li>Anonymisation of data</li> <li>Secure data backup in at least three places</li> </ul>	Low
Complaint	Complaint from participant about research process	Medium Possibility that a complaint could arise at any time, whether justified or not	<ul style="list-style-type: none"> <li>Details of the University Research Governance Office provided in invitation to participate in research should a participant wish to make a complaint</li> </ul>	Medium

## Appendix D: Summary of COMEX disciplinary notices

Note: these are summaries and excerpts from actual enforcement notices, tabulated for analysis.

Ref	Year	Summary
<a href="#">COMEX-07-16-BC</a>	2010	<ul style="list-style-type: none"> <li>• Prearranged trading in open outcry</li> <li>• Private communications – copper futures</li> <li>• Orders not put across market</li> <li>• \$15k fine</li> <li>• One week ban</li> </ul>
<a href="#">COMEX-09-04-BC</a>	2010	<ul style="list-style-type: none"> <li>• Floor broker allowed another to access his trading system and enter clerk trades</li> <li>• Failure to supervise</li> <li>• Failure to maintain and produce trading records</li> <li>• Failure to respond in a timely manner</li> <li>• Default judgement</li> <li>• \$40k fine</li> <li>• \$67,980 restitution</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX-10-09-BC</a>	2010	<ul style="list-style-type: none"> <li>• Verbal misstatement to Market Regulation Department</li> <li>• During on the record interview</li> <li>• Improper facilitation of registration of employee clerk for many years</li> <li>• Access to building and floor to engage in “freelance clerking”</li> <li>• Clerk did not provide clerical services to respondent</li> <li>• Not supervised by respondent or anyone else</li> <li>• Settlement</li> <li>• \$20k fine</li> <li>• 6-month ban</li> </ul>
<b>Total penalties 2010</b>	<b>Total penalties 2010</b>	<b>\$75,000</b>
Total volumes 31/12/10	Total volumes 31/12/10	<b>ADV 316,000 (contracts, rd turn, notional value)</b>
<a href="#">Post-tax profit 31/12/10</a>	Post-tax profit 31/12/10	“The company reports the results of its operations as one reporting segment primarily comprised of the CME, CBOT, NYMEX, and COMEX exchanges. The remaining operations do not meet the thresholds for reporting separate segment information.”

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Ref	Year	Summary
2010 themes	2010 themes	Prearranged trading in open outcry (x1), failure to supervise (x1), failure to maintain records (x1), failure to appear (x1), allowing others to access trading system (x1)
<a href="#">COMEX-10-07585-BC</a>	2011	<ul style="list-style-type: none"> <li>• Failure to respond</li> <li>• Traded ahead and took opposite of client orders</li> <li>• Pre-arranged, non-competitive trading</li> <li>• Improperly legged spreads</li> <li>• Failed to maintain and produce trade records</li> <li>• Failure to appear</li> <li>• Violated prior cease and desist order</li> <li>• \$45k fine</li> <li>• \$34,730 disgorgement</li> <li>• Barred from reapplying for access</li> </ul>
<a href="#">COMEX-10-04-BC</a>	2011	<ul style="list-style-type: none"> <li>• Prearranged trading in open outcry</li> <li>• Failure to respond</li> <li>• \$35k fine</li> <li>• \$1.25k disgorgement</li> <li>• 6 week ban</li> </ul>
<a href="#">COMEX-10-7526-BC</a>	2011	<ul style="list-style-type: none"> <li>• Use of inappropriate language towards exchange staff</li> <li>• Floor broker voluntarily submitted himself to exchange jurisdiction</li> <li>• Settlement</li> <li>• \$3k</li> </ul>
<a href="#">COMEX 10-07-BC and COMEX 10-07974-BC</a>	2011	<ul style="list-style-type: none"> <li>• Failure to respond</li> <li>• Taken as a deemed admission</li> <li>• Failure to produce requested trading records</li> <li>• Used membership privileges in a manner detrimental to the interest or welfare of the exchange</li> <li>• Failed to provide timely proof of payment of an arbitration award</li> <li>• \$50k fine</li> <li>• Ban from reapplying for admission for one year</li> </ul>
<a href="#">COMEX-10-07590-BC</a>	2011	<ul style="list-style-type: none"> <li>• Former clerk knowingly made material misstatements to the exchange that falsely identified him as an employee of a member to gain access to the exchange building and floor</li> <li>• Did this to engage in freelance clerking</li> <li>• \$50k</li> <li>• Two year ban</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX-10-07511-BC</a>	2011	<ul style="list-style-type: none"> <li>Floor trader engaged in pre-arranged trading</li> <li>Wash trading gold and silver</li> <li>Uncompetitive</li> <li>\$40k</li> <li>\$5.6k disgorgement</li> <li>14-day ban</li> </ul>
<a href="#">COMEX-11-08131-BC</a>	2011	<ul style="list-style-type: none"> <li>Firm inadvertently held position more than spot month gold limit</li> <li>Settlement</li> <li>\$10k fine</li> <li>\$7,250 disgorgement</li> </ul>
<a href="#">CME 09-06448-MS-BC</a>	2011	<ul style="list-style-type: none"> <li>Execution of non-bona fide EFRP transactions</li> <li>Enable parties to establish or change futures positions without any economic risk</li> <li>NM</li> <li>Settlement</li> <li>\$100k</li> </ul>
<a href="#">CME 09-06448-MS-BC-2</a>	2011	<ul style="list-style-type: none"> <li>Employee of firm in case above</li> <li>Arranged the non-bona-fide EFRPs</li> <li>Settlement</li> <li>NM</li> <li>\$20k</li> <li>10-day ban</li> </ul>
<b>Total penalties 2011</b>	<b>Total penalties 2011</b>	<b>\$353,000</b>
Total volumes 31/12/11	Total volumes 31/12/11	<b>ADV 387,000 (contracts, rd turn, notional value)</b>
Post-tax profit 31/12/11	Post-tax profit 31/12/11	“Segment Reporting. The company reports the results of its operations as one operating segment primarily comprised of CME, CBOT, NYMEX, COMEX, and KCBT exchanges. The remaining operations do not meet the thresholds for reporting separate segment information.”
2011 themes	2011 themes	Bad language towards exchange staff (x1), failure to provide timely proof of payment in arbitration (x1), knowingly making misstatements (x1), position limit breach (x1), EFP breach (x2), trading ahead (x1), failure to maintain records (x2), failure to appear (x2), prearranged/wash trading (x3), violating previous cease and desist (x1)
<a href="#">COMEX-10-07587-BC</a>	2012	<ul style="list-style-type: none"> <li>Prearranged trading in open outcry</li> <li>Front running customer order</li> <li>Failed to properly record trades on trading cards</li> <li>M</li> <li>Settlement</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• \$110k fine</li> <li>• 9-month ban</li> <li>• 3-month prohibition from filing for any brokerage after ban served</li> </ul>
<a href="#">COMEX-12-8717-BC</a>	2012	<ul style="list-style-type: none"> <li>• Firm inadvertently transferred positions in December 2011 Gold futures contracts between separate entities, with different beneficial owners</li> <li>• Accidental netting down of positions in gold futures after applicable deadline, represented more than 1% open interest</li> <li>• M</li> <li>• Settlement</li> <li>• \$70k</li> </ul>
<a href="#">COMEX-11-08603-BC</a>	2012	<ul style="list-style-type: none"> <li>• Two traders of firm prearranged trades</li> <li>• Gold futures</li> <li>• Purpose of transferring positions</li> <li>• Two proprietary accounts with same beneficial ownership</li> <li>• Part of firm's migration of commodities business</li> <li>• Buys and sells entered on Globex less than 5 seconds apart</li> <li>• Failure to supervise or provide appropriate compliance training</li> <li>• NM</li> <li>• Settlement</li> <li>• \$50k</li> </ul>
<b>Total penalties 2012</b>	<b>Total penalties 2012</b>	<b>\$230,000</b>
Total volumes 31/12/12	Total volumes 31/12/12	<b>ADV 352,000 (contracts, rd turn, notional value)</b>
Post-tax profit 31/12/12	Post-tax profit 31/12/12	The company reports the results of its operations as one reporting segment primarily comprised of the CME, CBOT, NYMEX, COMEX, and KCBT exchanges.
2012 themes	2012 themes	Inadvertent position limit breach (x1), matching less 5 seconds in Globex (x1), failure to supervise (x1), pre-arranged/wash trading (x2), failure to maintain records (x1), trading ahead (x1)
<a href="#">COMEX-12-8916-BC</a>	2013	<ul style="list-style-type: none"> <li>• Former employee of an affiliate of a M prearranged seven trades – Gold and Silver</li> <li>• Purpose of transferring positions</li> <li>• Two proprietary accounts with same beneficial ownership</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Entered on Globex and executed within one second of each other</li> <li>• NM</li> <li>• Settlement</li> <li>• \$5k</li> <li>• 5-day ban</li> </ul>
<a href="#">COMEX-11-8507-BC</a>	2013	<ul style="list-style-type: none"> <li>• Open outcry trader prearranged a “round-turn” trade in silver options</li> <li>• Purpose of passing money to another COMEX member</li> <li>• M</li> <li>• Fine</li> <li>• \$10k</li> <li>• 10-day ban</li> </ul>
<a href="#">COMEX-11-8507-BC</a>	2013	<ul style="list-style-type: none"> <li>• Open outcry trader prearranged “round-turn” trades in silver options</li> <li>• Purpose of receiving money passes from other COMEX members</li> <li>• M</li> <li>• \$20k</li> <li>• 20-day ban</li> </ul>
<a href="#">COMEX-11-08466-BC</a>	2013	<ul style="list-style-type: none"> <li>• Pre-arranged, pre-negotiated and non-competitive trades and/or arranging transactions simultaneously for two different beneficial owners</li> <li>• Identification of Globex terminal operators</li> <li>• NM</li> <li>• 105k fine</li> <li>• 7,775 restitution</li> <li>• 1 year ban</li> </ul>
<a href="#">COMEX-11-8581-BC</a>	2013	<ul style="list-style-type: none"> <li>• Identification of Globex terminal operators</li> <li>• Layering and spoofing or similarly not bona fide</li> <li>• M</li> <li>• 71,880 fine</li> <li>• 164,118.37(*) disgorgement</li> </ul>
<a href="#">COMEX-12-9162-BC</a>	2013	<ul style="list-style-type: none"> <li>• Position limit violation</li> <li>• M</li> <li>• 25k fine</li> <li>• 66,200 disgorgement</li> </ul>
<a href="#">COMEX-13-9340-BC</a>	2013	<ul style="list-style-type: none"> <li>• Firm failed to adequately monitor the operation of the industry standard auto-spreader employed by the firm, focusing merely on the actual trades executed by the firm’s Copper auto-spreader, and failing to monitor the auto-spreader program’s messaging activity, which included order and modification activity. This resulted in the auto-</li> </ul>

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Ref	Year	Summary
		<p>spreader streaming price modifications, thereby compromising CME Group’s Market Regulation Department’s proprietary electronic audit trail data and disclosing prices to the market that were not viable.</p> <ul style="list-style-type: none"> <li>• NM</li> <li>• Settlement</li> <li>• \$90k fine</li> </ul>
<b>Total penalties 2013</b>	<b>Total penalties 2013</b>	<b>\$326,880</b>
Total volumes 31/12/13	Total volumes 31/12/13	<b>ADV 386,000 (contracts, rd turn, notional value)</b>
Post-tax profit 31/12/13	Post-tax profit 31/12/13	“Segment Reporting. The company reports the results of its operations as one operating segment primarily comprised of CME, CBOT, NYMEX, and COMEX exchanges. The remaining operations do not meet the thresholds for reporting separate segment information.”
2013 themes	2013 themes	Pre-arranged/wash trades (x4), less than 5 seconds (x1), position limit breach (x1), Globex ID issues (x1), failure to manage autospreader (x1)
<a href="#">COMEX-11-8253-BC</a>	2014	<ul style="list-style-type: none"> <li>• Pre-arranged, pre-negotiated and non-competitive trades and/or arranging transactions simultaneously for two different beneficial owners</li> <li>• Breach of customer priority and/or trading against customers’ orders</li> <li>• M</li> <li>• 30k fine</li> <li>• 1.125k disgorgement</li> <li>• 250 restitution</li> <li>• 2-week suspension</li> </ul>
<a href="#">COMEX-12-9058-BC</a>	2014	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• NM</li> <li>• \$15k</li> </ul>
<a href="#">COMEX 12-9009-BC</a>	2014	<ul style="list-style-type: none"> <li>• Exchange for related physical documentation breach</li> <li>• NM</li> <li>• 35k</li> </ul>
<a href="#">COMEX 13-9300-BC</a>	2014	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• Exchange for related physical documentation breach</li> <li>• NM</li> <li>• \$40k</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX</a> <a href="#">13-9621-BC</a>	2014	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• Exchange for related physical documentation breach</li> <li>• NM</li> <li>• \$85k</li> </ul>
<a href="#">COMEX</a> <a href="#">12-8924-BC</a>	2014	<ul style="list-style-type: none"> <li>• Entity executed block trades that were not reported within applicable time limit</li> <li>• Misreported true and accurate time of execution</li> <li>• Failed to maintain true and accurate time</li> <li>• Failure to supervise</li> <li>• NM</li> <li>• Settlement</li> <li>• \$20k</li> </ul>
<a href="#">COMEX 12-7431-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to submit accurate CTI codes for numerous trades executed on exchange across several dates</li> <li>• M</li> <li>• Settlement</li> <li>• \$700 (hundred) fine</li> </ul>
<a href="#">COMEX</a> <a href="#">12-9197-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to submit accurate CTI codes for numerous trades executed on exchange across several dates</li> <li>• M</li> <li>• Settlement</li> <li>• \$500 (hundred) fine</li> </ul>
<a href="#">COMEX</a> <a href="#">12-9186-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to submit accurate CTI codes for numerous trades executed on exchange across several dates</li> <li>• M</li> <li>• Settlement</li> <li>• \$1.4k</li> </ul>
<a href="#">COMEX</a> <a href="#">12-7438-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to submit accurate CTI codes for numerous trades executed on exchange across several dates</li> <li>• M</li> <li>• Settlement</li> <li>• \$9k</li> </ul>
<a href="#">COMEX</a> <a href="#">12-9147-BC</a>	2014	<ul style="list-style-type: none"> <li>• Reported several instances of inaccurate large trader positions for numerous COMEX contracts</li> <li>• One trade date</li> <li>• provided a corrected large trader file after the adjustment deadline</li> </ul>



Appendix D

Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Reported four instances of inaccurate open interest position.</li> <li>• M</li> <li>• Settlement</li> <li>• \$3k</li> </ul>
<a href="#">COMEX</a> <a href="#">12-9183-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to submit accurate CTI codes for numerous trades executed on exchange across several dates</li> <li>• M</li> <li>• Settlement</li> <li>• \$1k</li> </ul>
<a href="#">COMEX</a> <a href="#">12-9190-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to submit accurate CTI codes for numerous trades executed on exchange across several dates</li> <li>• M</li> <li>• Settlement</li> <li>• \$2.5k</li> </ul>
<a href="#">COMEX</a> <a href="#">12-7434-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to submit accurate CTI codes for numerous trades executed on exchange across several dates</li> <li>• M</li> <li>• Settlement</li> <li>• \$500 (hundred)</li> </ul>
<a href="#">COMEX 11-8584-BC</a>	2014	<ul style="list-style-type: none"> <li>• Individual directed execution of a series of wash trades over a sustained period</li> <li>• Gold futures, two accounts with same beneficial owner</li> <li>• Failed to supervise traders</li> <li>• NM</li> <li>• Settlement</li> <li>• No financial penalty imposed – financial hardship</li> <li>• 3-month ban</li> </ul>
<a href="#">COMEX 14-9718-BC</a>	2014	<ul style="list-style-type: none"> <li>• Exchange for related physical documentation breach</li> <li>• M</li> <li>• 15k</li> </ul>
<a href="#">COMEX</a> <a href="#">12-9204-BC-1</a>	2014	<ul style="list-style-type: none"> <li>• Two traders of entity entered wash trades on several dates</li> <li>• Silver options</li> <li>• Accounts with same beneficial owner</li> <li>• Failure to supervise</li> <li>• NM</li> <li>• Settlement</li> <li>• \$40k</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX</a> <a href="#">12-9204-BC-2</a>	2014	<ul style="list-style-type: none"> <li>• Individual entered wash trades on several dates</li> <li>• Silver options</li> <li>• Accounts with same beneficial owner</li> <li>• NM</li> <li>• Settlement</li> <li>• \$5k</li> <li>• 15-day ban</li> </ul>
<a href="#">COMEX</a> <a href="#">12-8925-BC</a>	2014	<ul style="list-style-type: none"> <li>• Individual directed employees to enter a series of wash trades</li> <li>• Two occasions</li> <li>• Gold</li> <li>• Accounts held by two entities to avoid margin calls</li> <li>• Individual beneficial owner of both</li> <li>• Failure to supervise</li> <li>• NM</li> <li>• Settlement</li> <li>• \$35k</li> </ul>
<a href="#">COMEX 12-9037-BC</a>	2014	<ul style="list-style-type: none"> <li>• Overstatement of open interest</li> <li>• M</li> <li>• 15k</li> </ul>
<a href="#">COMEX</a> <a href="#">13-7768-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to properly register Tag50 IDs</li> <li>• Allowed orders to be entered with wrong IDs</li> <li>• Several occasions 2010-13</li> <li>• M</li> <li>• Settlement</li> <li>• \$1k</li> </ul>
<a href="#">COMEX</a> <a href="#">13-7769-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to properly register Tag50 IDs</li> <li>• Allowed orders to be entered with wrong IDs</li> <li>• Several occasions 2010-13</li> <li>• M</li> <li>• Settlement</li> <li>• \$1k</li> </ul>
<a href="#">COMEX</a> <a href="#">13-7479-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to properly register Tag50 IDs</li> <li>• Allowed orders to be entered with wrong IDs</li> <li>• Several occasions 2010-13</li> <li>• M</li> <li>• Settlement</li> <li>• \$600 (hundred)</li> </ul>
<a href="#">COMEX</a> <a href="#">13-7480-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to properly register Tag50 IDs</li> <li>• Allowed orders to be entered with wrong IDs</li> <li>• Several occasions 2010-13</li> <li>• M</li> <li>• Settlement</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• \$600 (hundred)</li> </ul>
<a href="#">COMEX 13-7770-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to properly register Tag50 IDs</li> <li>• Allowed orders to be entered with wrong IDs</li> <li>• Several occasions 2010-13</li> <li>• M</li> <li>• Settlement</li> <li>• \$2.1k</li> </ul>
<a href="#">COMEX 13-7771-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to properly register Tag50 IDs</li> <li>• Allowed orders to be entered with wrong IDs</li> <li>• Several occasions 2010-13</li> <li>• M</li> <li>• Settlement</li> <li>• \$2.1k</li> </ul>
<a href="#">COMEX 13-7606-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to properly register Tag50 IDs</li> <li>• Allowed orders to be entered with wrong IDs</li> <li>• Several occasions 2010-13</li> <li>• M</li> <li>• Settlement</li> <li>• \$1k</li> </ul>
<a href="#">COMEX 13-7607-BC</a>	2014	<ul style="list-style-type: none"> <li>• Firm failed to properly register Tag50 IDs</li> <li>• Allowed orders to be entered with wrong IDs</li> <li>• Several occasions 2010-13</li> <li>• M</li> <li>• Settlement</li> <li>• \$1k</li> </ul>
<a href="#">COMEX 14-9920-BC</a>	2014	<ul style="list-style-type: none"> <li>• Layering and spoofing or similarly not bona fide</li> <li>• NM</li> <li>• 7.5k</li> </ul>
<a href="#">COMEX 11-8567-BC</a>	2014	<ul style="list-style-type: none"> <li>• Conflicts of interest in personal account dealing</li> <li>• NM</li> <li>• 32.5k</li> <li>• 23,847 disgorgement</li> </ul>
<a href="#">COMEX 14-9823-BC</a>	2014	<ul style="list-style-type: none"> <li>• Entity held copper futures position 206% over standard expiration month limit that was in effect</li> <li>• NM</li> <li>• Settlement</li> <li>• \$45k</li> </ul>
<a href="#">COMEX 11-08380-BC</a>	2014	<ul style="list-style-type: none"> <li>• Layering and spoofing type activity involving iceberg and non-iceberg orders</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Several dates</li> <li>• Created significant imbalance in the order book</li> <li>• M</li> <li>• Settlement</li> <li>• \$50k</li> <li>• 1 month ban</li> </ul>
<a href="#">COMEX</a> <a href="#">13-9628-BC</a>	2014	<ul style="list-style-type: none"> <li>• Entity entered an EFRP transaction without maintaining sufficient documentation of the related OTC transaction</li> <li>• Not bona fide</li> <li>• M</li> <li>• \$15k fine</li> </ul>
<b>Total penalties 2014</b>	<b>Total penalties 2014</b>	<b>\$513,000</b>
Total volumes 31/12/14	Total volumes 31/12/14	<b>ADV 337,000 (contracts, rd turn, notional value)</b>
Post-tax profit 31/12/14	Post-tax profit 31/12/14	“The company reports the results of its operations as one reporting segment primarily comprised of the CME, CBOT, NYMEX, and COMEX exchanges. The remaining operations do not meet the thresholds for reporting separate segment information”
2014 themes	2014 themes	Layering/spoofing (x2), personal account dealing / conflict of interest (x1), EFP breach (x5), position limit breach (x1), failure to supervise (x4), pre-arranged/wash trading (x8), trading ahead (x1), block trade breaches (x1), large trader reporting breach (x1), open interest breach (x1), Tag50 breach (x8), failure to submit accurate CTI (x8)
<a href="#">COMEX</a> <a href="#">13-9652-BC</a>	2015	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Sustained period – July 2013 – November 2013</li> <li>• Used iceberg orders as well as others</li> <li>• Created significant imbalance</li> <li>• M</li> <li>• Settlement</li> <li>• \$60k fine</li> <li>• 4-week ban</li> </ul>
<a href="#">COMEX</a> <a href="#">14-9918-BC</a>	2015	<ul style="list-style-type: none"> <li>• Individual directed firm’s traders to several offsetting buy/sell orders in gold futures for purpose of closing positions at clearer</li> <li>• Failure to supervise</li> <li>• M</li> <li>• Settlement</li> <li>• \$10k</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX</a> <a href="#">11-8619-BC</a>	2015	<ul style="list-style-type: none"> <li>• 5-day ban</li> <li>• Multiple occasions between 2010-2012</li> <li>• Employees of firm traded accounts of an affiliate</li> <li>• Received market and limit orders that customers expected to be booked on Globex</li> <li>• Were executed as EFRPs</li> <li>• Prices not always negotiated but determined by member</li> <li>• Inadequate documentation of OTC leg</li> <li>• Operational error didn't always appear as an EFRP</li> <li>• Certain not bona fide</li> <li>• M</li> <li>• Settlement</li> <li>• \$1.1m</li> </ul>
<a href="#">COMEX</a> <a href="#">13-9480-BC-1</a>	2015	<ul style="list-style-type: none"> <li>• Exchange for related physical documentation breach</li> <li>• M</li> <li>• 15k</li> </ul>
<a href="#">COMEX</a> <a href="#">14-9914-BC</a>	2015	<ul style="list-style-type: none"> <li>• Position limit violation</li> <li>• M</li> <li>• 40k</li> </ul>
<a href="#">COMEX</a> <a href="#">13-9584-BC</a>	2015	<ul style="list-style-type: none"> <li>• Execution of transactions for purposes of transferring equity between accounts</li> <li>• NM</li> <li>• 15k</li> </ul>
<a href="#">COMEX</a> <a href="#">13-9598-BC</a>	2105	<ul style="list-style-type: none"> <li>• Individual was employed by a M</li> <li>• Engaged in layering and spoofing type activity</li> <li>• Several trade dates</li> <li>• NM</li> <li>• \$35k</li> <li>• 15-day ban</li> </ul>
<a href="#">COMEX</a> <a href="#">14-0029-BC-1</a>	2015	<ul style="list-style-type: none"> <li>• Employee of firm executed a series of wash trades between 2010-11</li> <li>• Done to liquidate long and short positions to avoid deliveries or transfer positions between accounts to avoid posting margin</li> <li>• Failure to supervise</li> <li>• M</li> <li>• Settlement</li> <li>• \$40k</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX</a> <a href="#">14-0029-BC-2</a>	2015	<ul style="list-style-type: none"> <li>• Employee of firm mentioned in above case</li> <li>• NM</li> <li>• Settlement</li> <li>• \$5k</li> </ul>
<a href="#">COMEX</a> <a href="#">14-9932-BC</a>	2015	<ul style="list-style-type: none"> <li>• Firm executed two block trades on two different dates that were not reported to the exchange within time limit</li> <li>• Misreported two spread transactions as four outrights</li> <li>• M</li> <li>• Settlement</li> <li>• \$22.5k</li> </ul>
<a href="#">COMEX</a> <a href="#">10-7522-BC</a>	2015	<ul style="list-style-type: none"> <li>• Individual exceeded position/accountability limits in gold for three days in a row</li> <li>• M</li> <li>• Settlement</li> <li>• \$25k</li> </ul>
<a href="#">COMEX</a> <a href="#">13-9523-BC</a>	2015	<ul style="list-style-type: none"> <li>• Cherry picked trades intended for customers on several trade dates</li> <li>• Caused customers to be filled at inferior prices</li> <li>• Failure to appear</li> <li>• M</li> <li>• \$100k</li> <li>• \$178,490 disgorgement</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX</a> <a href="#">13-9480-BC-2</a>	2015	<ul style="list-style-type: none"> <li>• Entity entered an EFRP deal that was not bona fide because it did not contain documentation of cash position</li> <li>• NM</li> <li>• Settlement</li> <li>• \$7.5k</li> </ul>
<a href="#">COMEX</a> <a href="#">12-9004-BC</a>	2015	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing activity in gold and silver futures between August 2012 – October 2012</li> <li>• NM</li> <li>• Settlement</li> <li>• \$35k</li> <li>• 30-day ban</li> </ul>
<a href="#">COMEX</a> <a href="#">13-9258-BC</a>	2015	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing activity in gold futures between September 2013 – February 2014</li> <li>• M</li> <li>• Settlement</li> <li>• \$75k fine</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• 5-week ban</li> </ul>
<a href="#">COMEX</a> <a href="#">14-9807-BC</a>	2015	<ul style="list-style-type: none"> <li>• Entity failed to monitor the operation of its trading platform and its connectivity with Globex</li> <li>• Led to unusually large and atypical trading activity by several of the entity's customers</li> <li>• Caused mass entry of orders</li> <li>• Resulted in disruptive and rapid price movement in gold futures market</li> <li>• NM</li> <li>• Settlement</li> <li>• \$200k</li> </ul>
<a href="#">COMEX</a> <a href="#">14-9915-BC</a>	2015	<ul style="list-style-type: none"> <li>• Execution of transactions for purposes of transferring equity between accounts</li> <li>• 15k</li> <li>• 10 days' suspension</li> </ul>
<a href="#">COMEX</a> <a href="#">14-9777-BC</a>	2015	<ul style="list-style-type: none"> <li>• Two customers of firm placed instruction to purchase and sale gold futures and options book</li> <li>• Firm processed transaction moving futures and options positions between accounts without obtaining exchange approval</li> <li>• M</li> <li>• Settlement</li> <li>• \$110k fine</li> </ul>
<a href="#">COMEX</a> <a href="#">13-9651-BC</a>	2015	<ul style="list-style-type: none"> <li>• Layering and spoofing or similarly not bona fide</li> <li>• NM</li> <li>• 100k</li> <li>• 15 days' suspension</li> </ul>
<a href="#">COMEX</a> <a href="#">14-9730-BC</a>	2015	<ul style="list-style-type: none"> <li>• Execution of transactions for purposes of transferring equity between accounts</li> <li>• M</li> <li>• 35k</li> <li>• 5 days' suspension</li> </ul>
<a href="#">COMEX</a> <a href="#">12-9204-BC-3</a>	2015	<ul style="list-style-type: none"> <li>• Individual executed wash trades with another trader at same firm between accounts same beneficial owner</li> <li>• Silver options</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$50k fine</li> <li>• <b>Permanent ban</b></li> </ul>
	2015	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activities</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX</a> <a href="#">13-9391-BC</a>		<ul style="list-style-type: none"> <li>• Gold, silver, and copper futures</li> <li>• February-April 2013</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$100k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX</a> <a href="#">14-0055-BC</a>	2015	<ul style="list-style-type: none"> <li>• Layering and spoofing or similarly not bona fide</li> <li>• 15k</li> <li>• 10 days' suspension</li> </ul>
<a href="#">COMEX</a> <a href="#">14-0042-BC</a>	2015	<ul style="list-style-type: none"> <li>• Position limit violation</li> <li>• NM</li> <li>• 65k fine</li> <li>• 2,938,545 disgorgement</li> </ul>
<a href="#">COMEX</a> <a href="#">14-9912-BC</a>	2015	<ul style="list-style-type: none"> <li>• Two traders at entity pre-hedged customers' orders on Globex prior to finalising block trade with clients</li> <li>• Failure to supervise</li> <li>• NM</li> <li>• Settlement</li> <li>• \$175k</li> <li>• \$63,320 disgorgement</li> </ul>
<a href="#">COMEX</a> <a href="#">14-9854-BC-1</a>	2015	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• Failure to supervise employees and agents</li> <li>• NM</li> <li>• 50k</li> </ul>
<a href="#">COMEX</a> <a href="#">14-9854-BC-2</a>	2015	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• NM</li> <li>• 10k</li> </ul>
<a href="#">COMEX</a> <a href="#">14-9854-BC-3</a>	2015	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• NM</li> <li>• 10k</li> </ul>
<b>Total penalties 2015</b>	<b>Total penalties 2015</b>	<b>\$2,505,000</b>
Total volumes 31/12/15	Total volumes 31/12/15	<b>ADV 344,000 (contracts, rd turn, notional value)</b>
Post-tax profit 31/12/15	Post-tax profit 31/12/15	Not published separately



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Ref	Year	Summary
2015 themes	2015 themes	Failure to supervise (x4), pre-arranged/wash trading (10), failure to appear (x3), EFP issues (x3), position limit breaches (x3), layering/spoofing (x7), directing others to commit breach (x1), cherry picking trades for self, filling at inferior price (x1), failure to monitor trading system connected to Globex (x1), disruptive activity (x1), pre-hedging client orders (x1), block trade breaches (x1)
<a href="#">COMEX 14-0043-BC</a>	2016	<ul style="list-style-type: none"> <li>• Position limit violation</li> <li>• NM</li> <li>• 25k fine</li> <li>• 250,137.50 disgorgement</li> </ul>
<a href="#">COMEX 15-0103-BC-1</a>	2016	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity in gold and silver futures</li> <li>• Verbal misstatements to exchange employees</li> <li>• NM</li> <li>• Settlement</li> <li>• \$90k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 15-0103-BC-2</a>	2016	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity in gold and silver futures</li> <li>• Verbal misstatements to exchange employees</li> <li>• Permitted another individual to use his Tag50</li> <li>• NM</li> <li>• Settlement</li> <li>• \$100k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 14-0059-BC</a>	2016	<ul style="list-style-type: none"> <li>• Individual manually engaged in layering and spoofing type activity</li> <li>• NM</li> <li>• Settlement</li> <li>• \$20k</li> <li>• 15-day ban</li> </ul>
<a href="#">COMEX 15-0143-BC</a>	2016	<ul style="list-style-type: none"> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• NM</li> <li>• 20k</li> <li>• 20 days' suspension</li> </ul>
<a href="#">COMEX 13-9490-BC-2</a>	2016	<ul style="list-style-type: none"> <li>• Individual was formerly an employee at a M</li> <li>• Engaged in layering and spoofing type activity in gold futures</li> <li>• NM</li> <li>• Settlement</li> <li>• \$45k</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• 20-day ban</li> </ul>
<a href="#">COMEX</a> <a href="#">13-9490-BC-1</a>	2016	<ul style="list-style-type: none"> <li>• Trader engaged in layering and spoofing activity in gold futures</li> <li>• M</li> <li>• \$12,683 disgorgement</li> </ul>
<a href="#">COMEX</a> <a href="#">14-0050-BC</a>	2016	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing activity in silver and copper futures</li> <li>• Disruptive trading</li> <li>• M</li> <li>• \$90k</li> <li>• 4-week ban</li> </ul>
<b>Total penalties 2016</b>	<b>Total penalties 2016</b>	<b>\$390,000</b>
Total volumes 31/12/16	Total volumes 31/12/16	<b>ADV 460,000 (contracts, rd turn, notional value)</b>
Post-tax profit 31/12/16	Post-tax profit 31/12/16	Not published separately
2016 themes	2016 themes	Testing in production (x1), personal account dealing / conflict of interest (x1), layering/spoofing (x6), position limit breach (x1), knowingly making misstatements (x1)
<a href="#">COMEX</a> <a href="#">15-0274-BC</a>	2017	<ul style="list-style-type: none"> <li>• Individual executed two round turn transactions between personal account and account owned by employer</li> <li>• Profited at expense of employer</li> <li>• NM</li> <li>• Settlement</li> <li>• \$25k</li> <li>• 1 year ban</li> </ul>
<a href="#">COMEX</a> <a href="#">15-0293-BC</a>	2017	<ul style="list-style-type: none"> <li>• Entity entered 7,156 orders in gold futures to test latency rather than trading</li> <li>• All sent through a single Tag50 ID</li> <li>• NM</li> <li>• Settlement</li> <li>• \$55k</li> </ul>
<a href="#">COMEX</a> <a href="#">12-8979-BC</a>	2017	<ul style="list-style-type: none"> <li>• In July and August 2013, in the August 2013 Gold and December 2013 Gold futures markets, individual employed a trading strategy that consisted of frequently entering and cancelling a series of orders, at various prices, for the purpose of, including but not limited to, discovering support for or resistance to the order prices he had entered and whether any such support or resistance was a</li> </ul>

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Ref	Year	Summary
		<p>legitimate indicator of other market participants' interest in executing trades at various prices, rather than to execute trades.</p> <ul style="list-style-type: none"> <li>• M</li> <li>• \$96k fine</li> <li>• 10-day ban</li> </ul>
<a href="#">COMEX</a> <a href="#">15-0180-BC-1</a>	2017	<ul style="list-style-type: none"> <li>• A trader employed by entity engaged in layering and spoofing type activity</li> <li>• NM</li> <li>• Settlement</li> <li>• \$30k</li> </ul>
<a href="#">COMEX</a> <a href="#">15-0180-BC-2</a>	2017	<ul style="list-style-type: none"> <li>• Trader employed by entity mentioned above engaged in layering and spoofing type activity</li> <li>• NM</li> <li>• Settlement</li> <li>• \$25k</li> <li>• 20-day ban</li> </ul>
<a href="#">COMEX</a> <a href="#">15-0261-BC-1</a>	2017	<ul style="list-style-type: none"> <li>• Employee of entity engaged in disruptive trading</li> <li>• Failure to supervise employees and agents</li> <li>• NM</li> <li>• Settlement</li> <li>• \$30k</li> </ul>
<a href="#">COMEX</a> <a href="#">16-0434-BC-1</a>	2017	<ul style="list-style-type: none"> <li>• Two traders employed by entity engaged in layering and spoofing type activity</li> <li>• NM</li> <li>• \$35k</li> </ul>
<a href="#">COMEX</a> <a href="#">16-0434-BC-2</a>	2017	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Silver futures</li> <li>• NM</li> <li>• Settlement</li> <li>• \$5k</li> <li>• 3-month ban</li> </ul>
<a href="#">COMEX</a> <a href="#">16-0434-BC-3</a>	2017	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Silver futures</li> <li>• NM</li> <li>• Settlement</li> <li>• \$3k</li> <li>• 6-month ban</li> </ul>
	2017	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• NM</li> <li>• 55k</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX</a> <a href="#">15-0193-BC</a>		
<a href="#">COMEX</a> <a href="#">16-0513-BC-1</a>	2017	<ul style="list-style-type: none"> <li>• Failure to supervise employees and agents</li> <li>• NM</li> <li>• 70k</li> </ul>
<a href="#">COMEX</a> <a href="#">15-0350-BC</a>	2017	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Silver futures</li> <li>• NM</li> <li>• Failure to appear</li> <li>• \$50k fine</li> <li>• Permanent ban</li> </ul>
<a href="#">COMEX</a> <a href="#">15-0261-BC-2</a>	2017	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$50k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX</a> <a href="#">13-9693-BC-1</a>	2017	<ul style="list-style-type: none"> <li>• Entity failed to ensure that its Tag 50 user ID registrations were current and accurate at all times.</li> <li>• Entity failed to supervise the use of Tag 50s by its employees to make certain that its traders used a unique user ID to access GLOBEX.</li> <li>• Entity's failure to maintain adequate and current records of its Tag 50 user ID registrations delayed the Exchange's investigation into the trading activity of entity's employees.</li> <li>• Three employees engaged in layering and spoofing type activity in gold and copper futures.</li> <li>• M</li> <li>• \$150k</li> <li>• \$162k disgorgement</li> </ul>
<a href="#">COMEX</a> <a href="#">15-0320-BC-1</a>	2017	<ul style="list-style-type: none"> <li>• Trader employed by entity entered orders for several COMEX contracts that he should have known would have self-matched</li> <li>• Different accounts held by entity</li> <li>• Failure to supervise</li> <li>• M</li> <li>• Settlement</li> </ul>

Appendix D

Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• \$20k</li> </ul>
<a href="#">COMEX</a> <a href="#">16-0445-BC</a>	2017	<ul style="list-style-type: none"> <li>• Individual used single Tag50 ID to place orders on one side of the market via an automated system using a pre-determined strategy, while simultaneously using same Tag50 to manually place orders on opposite side of the market</li> <li>• NM</li> <li>• Settlement</li> <li>• \$15k fine</li> <li>• 5-day ban</li> </ul>
<a href="#">COMEX</a> <a href="#">15-0320-BC-2</a>	2017	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• NM</li> <li>• \$5k fine</li> <li>• 5 days' suspension</li> </ul>
<a href="#">COMEX-</a> <a href="#">16-0429-BC-1</a>	2017	<ul style="list-style-type: none"> <li>• Employee of entity executed numerous trades in gold and silver futures on Globex for proprietary accounts where entity had control on both sides</li> <li>• Employee had knowledge orders would match one another</li> <li>• Done to liquidate positions and avoid delivery</li> <li>• Failure to supervise</li> <li>• NM</li> <li>• Settlement</li> <li>• \$15k</li> </ul>
<a href="#">COMEX-</a> <a href="#">16-0429-BC-2</a>	2017	<ul style="list-style-type: none"> <li>• Employee of entity mentioned in case above</li> <li>• NM</li> <li>• Settlement</li> <li>• \$5k fine</li> <li>• 10-day ban</li> </ul>
<a href="#">COMEX</a> <a href="#">13-9693-BC-2</a>	2017	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity involving gold and copper futures</li> <li>• Refused to fully answer questions posed by exchange employees</li> <li>• NM</li> <li>• Settlement</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX</a> <a href="#">16-0522-BC-1</a>	2017	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• NM</li> <li>• Settlement</li> <li>• \$45k</li> <li>• 10-day ban</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX</a> <a href="#">16-0522-BC-2</a>	2017	<ul style="list-style-type: none"> <li>Entity employed individual mentioned in the previous case</li> <li>NM</li> <li>\$18,841 disgorgement</li> </ul>
<b>Total penalties 2017</b>	<b>Total penalties 2017</b>	<b>\$784,000</b>
Total volumes 31/12/17	Total volumes 31/12/17	<b>ADV 460,000 (contracts, rd turn, notional value)</b>
Post-tax profit 31/12/17	Post-tax profit 31/12/17	Not published separately
2017 themes	2017 themes	Failure to supervise (x3), pre-arranged/wash trading (x5), failure to appear (x4), layering/spoofing (x13), disruptive trading (x1), Tag 50 breach (x2)
<a href="#">COMEX</a> <a href="#">15-0292-BC-1</a>	2018	<ul style="list-style-type: none"> <li>Entity entered and cancelled orders in various COMEX markets without intent to trade</li> <li>NM</li> <li>\$100k fine</li> </ul>
<a href="#">COMEX</a> <a href="#">15-0292-BC-2</a>	2018	<ul style="list-style-type: none"> <li>Failure to appear</li> <li>NM</li> <li><b>Permanent ban</b></li> </ul>
<a href="#">COMEX</a> <a href="#">15-0292-BC-3</a>	2018	<ul style="list-style-type: none"> <li>Failure to appear</li> <li>NM</li> <li><b>Permanent ban</b></li> </ul>
<a href="#">COMEX</a> <a href="#">16-0529-BC</a>	2018	<ul style="list-style-type: none"> <li>Individual engaged in layering and spoofing type activity in gold and silver futures</li> <li>M</li> <li>Settlement</li> <li>\$35k</li> <li>10-day ban</li> </ul>
<a href="#">COMEX 17-0646-BC-1</a>	2018	<ul style="list-style-type: none"> <li>Failure to supervise employees and agents</li> <li>NM</li> <li>10k fine</li> </ul>
<a href="#">COMEX 17-0646-BC-2</a>	2018	<ul style="list-style-type: none"> <li>Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>NM</li> </ul>

Appendix D

Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• 25k fine</li> <li>• 20 days' suspension</li> </ul>
<a href="#">COMEX 16-0495-BC</a>	2018	<ul style="list-style-type: none"> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• NM</li> <li>• 25k fine</li> <li>• 20 days' suspension</li> </ul>
<a href="#">COMEX 16-0425-BC-1</a>	2018	<ul style="list-style-type: none"> <li>• Individual engaged in a sustained period of layering and spoofing activity in collaboration with two other individuals</li> <li>• Several COMEX precious metals markets</li> <li>• Failure to submit documents</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$100k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0425-BC-2</a>	2018	<ul style="list-style-type: none"> <li>• Individual engaged in a sustained period of layering and spoofing activity in collaboration with two other individuals</li> <li>• Several COMEX precious metals markets</li> <li>• Failure to submit documents</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$100k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0425-BC-3</a>	2018	<ul style="list-style-type: none"> <li>• Individual engaged in a sustained period of layering and spoofing activity in collaboration with two other individuals</li> <li>• Several COMEX precious metals markets</li> <li>• Failure to submit documents</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$100k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0485-BC</a>	2018	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity for around two weeks</li> <li>• Gold and silver futures</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$50k</li> <li>• <b>Permanent ban</b></li> </ul>

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Ref	Year	Summary
<a href="#">COMEX 16-0538-BC</a>	2018	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$35k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0486-BC-1</a>	2018	<ul style="list-style-type: none"> <li>• On one or more occasions during the one-week period from July 1, 2016, through July 7, 2016, individual entered orders in the gold futures market with the intent, at the time of order entry, to cancel the order before execution.</li> <li>• Specifically, individual knowingly designed and operated an algorithmic trading system (“ATS”) which was specifically programmed to mislead other market participants through spoofing activity. The ATS placed a large order opposite a smaller order to entice market participants to trade into the individual’s small order, at which time his ATS would cancel the large order which he did not intend to trade.</li> <li>• The individual also knowingly traded a customer’s account without proper written trading authorization in place.</li> <li>• Following an inquiry from the customer’s introducing broker about this lack of written authorization, individual prepared and backdated a Power of Attorney to trade the customer’s account which reflected the oral agreement that he had in place with the customer.</li> <li>• Finally, from January 1, 2016 through July 7, 2016, individual placed orders for multiple trading accounts while knowingly using the Globex I.D.s registered to the owners of those trading accounts.</li> <li>• NM</li> <li>• Settlement</li> <li>• \$20k</li> <li>• 45-day ban</li> </ul>
<a href="#">COMEX-16-0593-BC</a>	2018	<ul style="list-style-type: none"> <li>• An automated trading system (“ATS”) deployed by firm malfunctioned because of testing in its production environment.</li> <li>• After the testing of the updates was completed, firm attempted to roll back the updates to resume trading with the technology that was previously in place. However, some of the updates were not rolled back and, on November 22, 2016, from 7:10:12.485 AM through 7:10:15.886 AM, the</li> </ul>



Appendix D

Ref	Year	Summary
		<p>malfunction caused orders to be routed to an executing broker's algorithm and submitted to the market. The orders resulted in the unintentional execution of trades, sharp price movements, and volume aberrations in the December 2016 Gold, December 2016 Silver, December 2016 Palladium and January 2017 Platinum futures contract markets. T</p> <ul style="list-style-type: none"> <li>• Since this incident, firm has enhanced its automated trading system risk control policies.</li> <li>• NM</li> <li>• \$15k fine</li> </ul>
<a href="#">COMEX 13-9693-BC-3</a>	2018	<ul style="list-style-type: none"> <li>• Layering and spoofing or similarly not bona fide</li> <li>• 20k fine</li> <li>• 2-year suspension</li> </ul>
<a href="#">COMEX 16-0569-BC-1</a>	2018	<ul style="list-style-type: none"> <li>• Pre-arranged, pre-negotiated and non-competitive trades and/or arranging transactions simultaneously for two different beneficial owners</li> <li>• Wash trades</li> <li>• Identification of Globex terminal operators</li> <li>• Failure to supervise employees and agents</li> <li>• NM</li> <li>• 70k fine</li> </ul>
<a href="#">COMEX 16-0486-BC-2</a>	2018	<ul style="list-style-type: none"> <li>• Failure to supervise and train employees</li> <li>• Failed to maintain a consistent authentication system for new accounts and failed to exercise due diligence for opening accounts and reviewing account documentation.</li> <li>• Entity also failed to supervise its agents in the handling of client services and account documentation for entity's clients.</li> <li>• Failure to supervise resulted in one of its agents directing a trader to submit backdated authorization documents as well as alter information on account opening forms, while continuing to allow this trader to trade in the Gold futures market for this account without proper written authorization.</li> <li>• NM</li> <li>• Settlement</li> <li>• \$75k</li> </ul>
<a href="#">COMEX 16-0587-BC-1</a>	2018	<ul style="list-style-type: none"> <li>• Individual permitted over 20 people to use his Tag50 ID for several years</li> <li>• Was used to place orders, included the commission of disorderly trading in gold</li> <li>• NM</li> </ul>

Appendix D

Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Settlement</li> <li>• \$5k</li> <li>• 6-month ban</li> </ul>
<a href="#">COMEX 16-0582-BC</a>	2018	<ul style="list-style-type: none"> <li>• Individual's automated trading system entered orders into silver and gold markets with intent to cancel before execution</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$50k</li> <li>• 4-week ban</li> </ul>
<a href="#">COMEX 16-0581-BC</a>	2018	<ul style="list-style-type: none"> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• Failure to appear</li> <li>• NM</li> <li>• 60k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0475-BC-1</a>	2018	<ul style="list-style-type: none"> <li>• Individual engaged in disruptive trading activity in the Gold Futures market by entering orders without the intent to trade.</li> <li>• Layering and spoofing style activity.</li> <li>• Failure to appear.</li> <li>• NM</li> <li>• \$80k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0475-BC-2</a>	2018	<ul style="list-style-type: none"> <li>• Individual engaged in disruptive trading activity in the Gold and Silver Futures market by entering orders without the intent to trade.</li> <li>• Layering and spoofing style activity.</li> <li>• Failure to appear.</li> <li>• NM</li> <li>• \$60k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 15-0351-BC-1</a>	2018	<ul style="list-style-type: none"> <li>• Individual engaged in disruptive trading activity in the Gold Futures market by entering orders without the intent to trade.</li> <li>• Layering and spoofing style activity.</li> <li>• Failure to appear.</li> <li>• NM</li> <li>• \$60k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 15-0351-BC-2</a>	2018	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>

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Ref	Year	Summary
<a href="#">COMEX 16-0554-BC-1</a>	2018	<ul style="list-style-type: none"> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• NM</li> <li>• 100k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0554-BC-2</a>	2018	<ul style="list-style-type: none"> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• Failure to appear</li> <li>• NM</li> <li>• 50k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0630-BC</a>	2018	<ul style="list-style-type: none"> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• Failure to appear</li> <li>• NM</li> <li>• 50k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0509-BC</a>	2018	<ul style="list-style-type: none"> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• Failure to appear</li> <li>• NM</li> <li>• 50k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0569-BC-2</a>	2018	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• Identification of Globex terminal operators</li> <li>• Non-compliance with pre-execution communication rules</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> <li>• 45k fine</li> </ul>
<a href="#">COMEX 16-0587-BC-2</a>	2018	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0587-BC-3</a>	2018	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0569-BC-3</a>	2018	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• 5k fine</li> <li>• 6 months</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX 16-0569-BC-4</a>	2018	<ul style="list-style-type: none"> <li>• Pre-arranged, pre-negotiated and non-competitive trades and/or arranging transactions simultaneously for two different beneficial owners</li> <li>• Wash trades</li> <li>• NM</li> <li>• \$35k fine</li> <li>• One month suspension</li> </ul>
<a href="#">COMEX 16-0605-BC</a>	2018	<ul style="list-style-type: none"> <li>• Identification of Globex terminal operators</li> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• \$22.5 fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0605-BC</a>	2018	<ul style="list-style-type: none"> <li>• Identification of Globex terminal operators</li> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• NM</li> <li>• \$22.5 fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 15-0265-BC</a>	2018	<ul style="list-style-type: none"> <li>• Identification of Globex terminal operators</li> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• NM</li> <li>• 60k</li> <li>• <b>permanent ban</b></li> </ul>
<a href="#">COMEX 17-0705-BC</a>	2018	<ul style="list-style-type: none"> <li>• Individual entered orders using the Tag50 of another person</li> <li>• Engaged in disruptive trading in gold and silver futures</li> <li>• Entered orders without intent to trade, layering and spoofing style</li> <li>• NM</li> <li>• Failure to appear</li> <li>• \$60k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<b>Total penalties 2018</b>	<b>Total penalties 2018</b>	<b>\$1,595,000</b>
Total volumes 31/12/18	Total volumes 31/12/18	<b>ADV 639,000 (contracts, rd turn, notional value)</b>

Appendix D

Ref	Year	Summary
Post-tax profit 31/12/18	Post-tax profit 31/12/18	Not published separately
2018 themes	2018 themes	Failure to supervise (x4), pre-arranged/wash trading (x4), failure to respond/appear (x20), Globex ID issues (x5), layering/spoofing (x23), disruptive trading (x1), testing in production (x1), Tag50 breach (x2), pre-execution communication non-compliance (x1), failure to conduct due diligence before opening accounts (x1), trading customers' accounts without authorisation (x1)
<a href="#">COMEX 17-0759-BC-1</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0759-BC-2</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0752-BC-1</a>	2019	<ul style="list-style-type: none"> <li>• Entity's traders entered orders in rapid succession on a single day</li> <li>• Silver futures</li> <li>• Caused price and volume spikes</li> <li>• Caused price adjustments in numerous silver contracts</li> <li>• Several occasions traders entered buy and sell orders within less than 5 seconds of each other</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$160k</li> </ul>
<a href="#">COMEX 17-0752-BC-2</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0752-BC-3</a>	2019	<ul style="list-style-type: none"> <li>• Individual arranged several wash trades in silver between accounts with the same beneficial owner</li> <li>• Prearranged trading</li> <li>• Buy and sell orders entered within less than 5 seconds of each other</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$30k</li> <li>• Two-year ban</li> </ul>
<a href="#">COMEX 17-0784-BC</a>	2019	<ul style="list-style-type: none"> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• Failure to appear</li> <li>• NM</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• 10k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0648-BC-1</a>	2019	<ul style="list-style-type: none"> <li>• Individual entered directly or indirectly COMEX precious orders with intent to cancel prior to execution</li> <li>• Allowed others to use Tag 50</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$37.5k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0648-BC-2</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• Order entry and trading activity in precious metal markets</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0648-BC-3</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• Order entry and trading activity in precious metal markets</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0648-BC-4</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• Order entry and trading activity in precious metal markets</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0648-BC-5</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• Order entry and trading activity in precious metal markets</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0648-BC-6</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• Order entry and trading activity in precious metal markets</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0648-BC-7</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• Order entry and trading activity in precious metal markets</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0648-BC-8</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• Order entry and trading activity in precious metal markets</li> <li>• NM</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0752-BC-4</a>	2019	<ul style="list-style-type: none"> <li>• Individuals employed by entity arranged several wash trades in silver between accounts with the same beneficial owner</li> <li>• Prearranged trading</li> <li>• Buy and sell orders entered within less than 5 seconds of each other</li> <li>• Settlement</li> <li>• \$20k</li> <li>• 6-month ban</li> </ul>
<a href="#">COMEX 16-0543-BC-1</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0543-BC-2</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0659-BC-1</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0659-BC-2</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• Settlement</li> <li>• \$40k</li> <li>• 1 year ban</li> </ul>
<a href="#">COMEX 17-0659-BC-3</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• Settlement</li> <li>• \$40k</li> <li>• 1 year ban</li> </ul>
<a href="#">COMEX 17-0659-BC-4</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• Settlement</li> <li>• \$40k</li> <li>• 1 year ban</li> </ul>
<a href="#">COMEX 17-0659-BC-5</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• Settlement</li> <li>• \$40k</li> <li>• 1 year ban</li> </ul>
<a href="#">COMEX 16-0524-BC-1</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>

Appendix D

Ref	Year	Summary
<a href="#">COMEX 16-0524-BC-2</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0524-BC-3</a>	2019	<ul style="list-style-type: none"> <li>• Identification of Globex terminal operators</li> <li>• Failure to appear</li> <li>• <b>permanent ban</b></li> </ul>
<a href="#">COMEX 17-0691-BC</a>	2019	<ul style="list-style-type: none"> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> <li>• 80k fine</li> </ul>
<a href="#">COMEX 18-0866-BC</a>	2019	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Several months</li> <li>• NM</li> <li>• \$70k fine</li> <li>• 4-month ban</li> </ul>
<a href="#">COMEX 17-0766-BC-1</a>	2019	<ul style="list-style-type: none"> <li>• Failure to supervise</li> <li>• Employee engaged in layering and spoofing type activity on several occasions in 2017</li> <li>• Failed to ensure each user allocated Tag 50</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$40k fine</li> </ul>
<a href="#">COMEX 17-0766-BC-2</a>	2019	<ul style="list-style-type: none"> <li>• Employee involved in layering and spoofing type activity per above case</li> <li>• NM</li> <li>• \$40k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0513-BC-3</a>	2019	<ul style="list-style-type: none"> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• Failure to appear</li> <li>• NM</li> <li>• 50k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 16-0513-BC-2</a>	2019	<ul style="list-style-type: none"> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• Failure to appear</li> <li>• NM</li> <li>• 50k</li> </ul>



Appendix D

Ref	Year	Summary
<a href="#">COMEX 17-0697-BC-1</a>	2019	<ul style="list-style-type: none"> <li>• <b>permanent ban</b></li> <li>• Identification of Globex terminal operators</li> <li>• Entering an order with intent to cancel to avoid execution or to mislead other participants, non-actionable messages</li> <li>• Failure to appear</li> <li>• NM</li> <li>• 60k</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0697-BC-2</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 17-0697-BC-3</a>	2019	<ul style="list-style-type: none"> <li>• Failure to appear</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 18-0880-BC</a>	2019	<ul style="list-style-type: none"> <li>• Individual engaged in pre-arranged trading on several occasions in a single month</li> <li>• Gold futures</li> <li>• Should have known would trade opposite each other for same beneficial owners</li> <li>• Failure to appear</li> <li>• NM</li> <li>• \$20k fine</li> <li>• 2 year ban</li> </ul>
<a href="#">COMEX 18-0972-BC</a>	2019	<ul style="list-style-type: none"> <li>• Submission of block trades in gold, copper, and silver futures with inaccurate trade times</li> <li>• Failure to report within required time period</li> <li>• Multiple occasions during a year</li> <li>• Failure to supervise</li> <li>• NM</li> <li>• Settlement</li> <li>• \$90k</li> </ul>
<a href="#">COMEX 18-0910-BC</a>	2019	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Gold and copper futures</li> <li>• NM</li> <li>• \$70k fine</li> <li>• \$9,710 disgorgement</li> <li>• 3 month ban</li> </ul>
<a href="#">COMEX 17-0810-BC</a>	2019	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Copper futures</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> </ul>

## Appendix D

Ref	Year	Summary
<b>Total penalties 2019</b>	<b>Total penalties 2019</b>	<b>\$987,500</b>
Total volumes 31/12/19	Total volumes 31/12/19	<b>ADV 668,000 (contracts, rd turn, notional value)</b>
Post-tax profit 31/12/19	Post-tax profit 31/12/19	Not published separately
2019 themes	2019 themes	Pre-arranged/wash trading (x1), failure to appear (x32), Tag50 breach (x4), disruptive (x1), layering/spoofing (x11), block trade breach (x1), failure to supervise (x2), matching 5 seconds (x1)
<a href="#">COMEX 18-0922-BC</a>	2020	<ul style="list-style-type: none"> <li>• March 2012: Firm discovered that one of its brokerage firm clients (“client”) automatically offset omnibus account positions in futures contracts using the FIFO method</li> <li>• Information not escalated to appropriate person in firm</li> <li>• Beginning February 2017, continuing until at least May 2018 one or more of firm’s employees were aware that a client was misrepresenting its positions</li> <li>• Also provided guidance to, and helped, client misreport positions regarding inaccurate copper futures position data</li> <li>• Resulted in inaccurate position data being published to market</li> <li>• Firm failed to require the client to provide accurate and timely owner and control information and continued to report inaccurate information regarding the ownership and control of the positions through May 2018</li> <li>• Client’s responses to exchange’s document requests were inaccurate and untimely</li> <li>• Firm asked to help but, on multiple occasions, provided the exchange with inaccurate audit trail data provided by the client</li> <li>• Failure to supervise</li> <li>• M</li> <li>• Settlement</li> <li>• \$650k fine</li> </ul>
<a href="#">COMEX 18-0960-BC-1</a>	2020	<ul style="list-style-type: none"> <li>• Firm’s brokers submitted multiple block trades with inaccurate trade execution times. Also failed to report within required time</li> <li>• Went on for almost six months</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Failure to supervise and train</li> <li>• NM</li> <li>• Settlement</li> <li>• \$20k fine</li> </ul>
<a href="#">COMEX 17-0768-BC</a>	2020	<ul style="list-style-type: none"> <li>• ATS individual programmed malfunctioned, causing multiple market orders to be entered on one side of the market in the July 2017 Copper futures contract, resulting in price movement and volume spikes.</li> <li>• After failing to identify the cause of the ATS malfunction, individual re-deployed the ATS back into a live environment, which malfunctioned again, causing similar market moving malfunction on May 24, 2017.</li> <li>• NM</li> <li>• \$25k fine</li> <li>• 30-day ban</li> </ul>
<a href="#">COMEX 18-0960-BC-2</a>	2020	<ul style="list-style-type: none"> <li>• Firm submitted multiple block trades with inaccurate trade execution times.</li> <li>• Failure to supervise and train</li> <li>• NM</li> <li>• Settlement</li> <li>• \$20k fine</li> </ul>
<a href="#">COMEX 17-0852-BC</a>	2020	<ul style="list-style-type: none"> <li>• Individual executed a series of round-turn transactions in several February, April, and May 2018 Gold Call Options markets on the CME Globex electronic platform between four individual accounts owned by clients of individual's employer and an account in individual's wife's name, as well as between an individual account over which individual had trading discretion and individual's wife's account. The purpose of these round-turn transactions was to transfer over \$11,000 on both CME and COMEX from the individual accounts to individual's wife's account.</li> <li>• Funds that were transferred from the individual accounts to individual's wife's account were reimbursed. Additionally, individual entered an order using a user ID other than his own unique user ID.</li> <li>• NM</li> <li>• Settlement</li> <li>• \$2.5k fine</li> <li>• One year ban</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX 18-1011-BC</a>	2020	<ul style="list-style-type: none"> <li>• Wash trading to transfer copper futures positions from one dormant account to another, active account, with common beneficial ownership</li> <li>• NM</li> <li>• \$30k fine</li> <li>• 20-day ban</li> </ul>
<a href="#">COMEX 18-0980-BC-1</a>	2020	<ul style="list-style-type: none"> <li>• One or more occasions in August 2018, individual prearranged the execution of transactions in the August 2019 Copper futures contracts for the purpose of transferring equity between accounts.</li> <li>• Failure to respond to charges and appear.</li> <li>• NM</li> <li>• \$5k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 18-0980-BC-2</a>	2020	<ul style="list-style-type: none"> <li>• On one or more occasions between May 2018, and August 2018, individual prearranged the execution of transactions in the December 2019 Gold futures and the August 2019 and September 2019 Copper futures contracts for the purpose of transferring equity between accounts.</li> <li>• Failure to respond to charges and appear.</li> <li>• NM</li> <li>• \$10k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 18-0980-BC-3</a>	2020	<ul style="list-style-type: none"> <li>• On one or more occasions in May 2018, individual prearranged the execution of transactions in the December 2019 Gold futures contracts for the purpose of transferring equity between accounts.</li> <li>• Failure to respond to charges.</li> <li>• NM</li> <li>• \$30k fine</li> <li>• Two-year ban</li> </ul>
<a href="#">COMEX 18-0980-BC-4</a>	2020	<ul style="list-style-type: none"> <li>• On one or more occasions in May 2018, individual prearranged the execution of transactions in the December 2019 Gold futures contracts for the purpose of transferring equity between accounts.</li> <li>• Failure to respond to charges.</li> <li>• NM</li> <li>• \$40k fine</li> <li>• Two-year ban</li> </ul>
<a href="#">COMEX 18-0985-BC</a>	2020	<ul style="list-style-type: none"> <li>• On one or more occasions during the time of March 2018 through July 2018 individual entered layering and spoofing activity.</li> <li>• NM</li> <li>• \$15k fine</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX 19-1079-BC</a>	2020	<ul style="list-style-type: none"> <li>• 10-day ban</li> <li>• On November 21, 2018, traders for entity and entity’s affiliate placed opposing orders in the COMEX December 2018 Gold Trading at Settlement (“DEC18 Gold TAS”) futures market for accounts with common beneficial ownership, resulting in those orders trading opposite one another.</li> <li>• Based on market conditions and knowledge of each other’s trading strategies, the traders knew or should have known that their TAS orders were likely to match with each other.</li> <li>• Firm failure to adequately respond to the exchange’s enquiries.</li> <li>• in response to Market Regulation’s request for all communications relevant to the trading activity described above, entity tasked one of the traders involved in that trading activity with gathering responsive communications. The trader provided an incomplete version of a relevant Bloomberg chat, and entity in turn produced this incomplete chat to Market Regulation. However, entity subsequently provided the full chat to Market Regulation.</li> <li>• M</li> <li>• Settlement</li> <li>• \$50k fine</li> </ul>
<a href="#">COMEX 16-0484-BC-1</a>	2020	<ul style="list-style-type: none"> <li>• Facts per case below</li> <li>• NM</li> <li>• Settlement</li> <li>• \$20k fine</li> <li>• Restitution (joint with individual below)</li> </ul>
<a href="#">COMEX 16-0484-BC-2</a>	2020	<ul style="list-style-type: none"> <li>• Individual engaged in dishonourable and uncommercial conduct inconsistent with just and equitable principles of trade in gold options and silver futures and options.</li> <li>• The matched trades consisted of the individual pre-arranging round-turn transactions between his employer’s account and Customer A’s account for the purpose of transferring equity from Customer A’s account to employer’s account(s), which resulted in the employer’s account receiving advantageous prices.</li> <li>• Multiple dates during the time from June 1, 2015, through June 30, 2016</li> <li>• Individual’s trading disadvantaged Customer A’s account in the amount of \$479,858.93.</li> <li>• NM</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Settlement</li> <li>• \$35k fine</li> <li>• Pay restitution \$479,858.93 (joint with entity above)</li> <li>• Two-year ban</li> <li>• Permanent ban from trading on a discretionary basis for or on behalf of any person or entity, whether by power of attorney or otherwise; and (2) entering customer orders in a brokerage capacity</li> </ul>
<a href="#">COMEX 18-0902-BC-1</a>	2020	<ul style="list-style-type: none"> <li>• Individual executed a series of pre-arranged trades in COMEX High-Grade Copper Trading at Settlement futures without exposing the orders subject to pre-execution communication for a minimum of five seconds.</li> <li>• Individual improperly entered orders on Globex using another trader's unique TAG 50 User ID.</li> <li>• M</li> <li>• Settlement</li> <li>• \$35k fine</li> <li>• 15-day ban</li> </ul>
<a href="#">COMEX 18-0902-BC-2</a>	2020	<ul style="list-style-type: none"> <li>• Individual executed a series of pre-arranged trades in COMEX High-Grade Copper Trading at Settlement futures without exposing the orders subject to pre-execution communication for a minimum of five seconds.</li> <li>• Individual improperly entered orders on Globex using another trader's unique TAG 50 User ID.</li> <li>• M</li> <li>• Settlement</li> <li>• \$50k fine</li> </ul>
<a href="#">COMEX 18-0902-BC-3</a>	2020	<ul style="list-style-type: none"> <li>• Individual executed a series of pre-arranged trades in COMEX High-Grade Copper Trading at Settlement futures without exposing the orders subject to pre-execution communication for a minimum of five seconds.</li> <li>• Individual improperly entered orders on Globex using another trader's unique TAG 50 User ID.</li> <li>• M</li> <li>• Settlement</li> <li>• \$45k fine</li> <li>• 10-day ban</li> </ul>
<a href="#">COMEX 15-0303-BC</a>	2020	<ul style="list-style-type: none"> <li>• Firm implemented customer order routing functionality that bypassed CME Group market integrity controls.</li> <li>• This functionality enabled its customer orders to avoid protection points applied to all market orders</li> </ul>

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Ref	Year	Summary
		<p>by CME Group’s Globex platform in reckless disregard for the adverse impact on the market. These protection points are designed to prevent extreme price movements and other market disruptions.</p> <ul style="list-style-type: none"> <li>• Between August 2015 and January 2016.</li> <li>• Caused various Metals markets, including the gold and silver futures markets, to experience price, liquidity and trade volume aberrations and Velocity Logic events.</li> <li>• M</li> <li>• Settlement</li> <li>• \$100k fine</li> </ul>
<a href="#">COMEX 18-0888-BC</a>	2020	<ul style="list-style-type: none"> <li>• Failure to supervise employees and agents</li> <li>• NM</li> <li>• 50k</li> <li>• 4-month suspension</li> </ul>
<a href="#">COMEX 18-0888-BC-2</a>	2020	<ul style="list-style-type: none"> <li>• Failure to supervise employees and agents</li> <li>• M</li> <li>• 50k</li> </ul>
<a href="#">COMEX 18-0902-BC-4</a>	2020	<ul style="list-style-type: none"> <li>• Pre-arranged, pre-negotiated and non-competitive trades and/or arranging transactions simultaneously for two different beneficial owners</li> <li>• M</li> <li>• \$35k</li> <li>• 15-day suspension</li> </ul>
<a href="#">COMEX 18-0902-BC-5</a>	2020	<ul style="list-style-type: none"> <li>• Pre-arranged, pre-negotiated and non-competitive trades and/or arranging transactions simultaneously for two different beneficial owners</li> <li>• Identification of Globex terminal operators</li> <li>• M</li> <li>• \$50k</li> <li>• 15-day suspension</li> </ul>
<a href="#">COMEX 18-0902-BC-5</a>	2020	<ul style="list-style-type: none"> <li>• Pre-arranged, pre-negotiated and non-competitive trades and/or arranging transactions simultaneously for two different beneficial owners</li> <li>• Identification of Globex terminal operators</li> <li>• M</li> <li>• \$50k</li> <li>• 15-day suspension</li> </ul>
<a href="#">COMEX 16-0524-BC-4</a>	2020	<ul style="list-style-type: none"> <li>• Identification of Globex terminal operators</li> <li>• NM</li> <li>• \$200k</li> <li>• 5-year suspension;</li> </ul>

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Ref	Year	Summary
<a href="#">COMEX 19-1141-BC-1</a>	2020	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• Purpose of closing positions</li> <li>• Failure to supervise</li> <li>• NM</li> <li>• Settlement</li> <li>• \$25k fine</li> </ul>
<a href="#">COMEX 19-1180-BC</a>	2020	<ul style="list-style-type: none"> <li>• Firm submitted multiple block trades in gold and silver futures and options spreads to the Exchange with inaccurate execution times. In some of these misreporting instances, the reported execution time of the block trade was the time the spread leg prices were determined rather than the time of the trade consummation.</li> <li>• Firm also failed to report block trades to the Exchange within the required time following execution. On multiple occasions, firm also improperly combined separately negotiated and executed trades on one ticket and reported the trades to the Exchange as a single block trade.</li> <li>• Failure to supervise and train</li> <li>• NM</li> <li>• Settlement</li> <li>• \$60k fine</li> </ul>
<a href="#">COMEX 19-1170-BC</a>	2020	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• NM</li> <li>• 40k fine</li> </ul>
<a href="#">COMEX 18-0920-BC</a>	2020	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing disruptive type activity</li> <li>• M</li> <li>• Settlement</li> <li>• \$65k fine</li> <li>• 9-day ban</li> </ul>
<a href="#">COMEX 17-0830-BC</a>	2020	<ul style="list-style-type: none"> <li>• Various occasions</li> <li>• Entered numerous buy and sell orders in various E-micro gold futures contracts for accounts controlled by individual, of individual's firm, with the intention that the orders trade opposite each other to avoid taking a bona fide position exposed to market risk.</li> <li>• Failure to answer charge</li> <li>• NM</li> <li>• \$30k fine</li> <li>• 6-month ban</li> </ul>
<b>Total penalties 2020</b>	<b>Total penalties 2020</b>	<b>\$1,837,500</b>



Appendix D

Ref	Year	Summary
Total volumes 31/12/20	Total volumes 31/12/20	<b>ADV 699,000 (contracts, rd turn, notional value)</b>
Post-tax profit 31/12/20	Post-tax profit 31/12/20	Not published separately
2020 themes	2020 themes	Non-bona fide trading (x1), bypassing exchange controls (x1), ATS malfunction (x1), misreporting of position information (x1), failure to provide accurate owner and control information (x1), failure to supervise (x7), pre-arranged/wash trading (x13), failure to respond/appear (x4), Globex ID and Tag 50 issues (x7), block trade breaches (x3), matching less than 5 seconds (x3)
<a href="#">COMEX 20-1307-BC</a>	2021	<ul style="list-style-type: none"> <li>• Individual entered buy and sell orders in same product and expiration month</li> <li>• Aim to avoid bona fide market position in gold</li> <li>• NM</li> <li>• Settlement</li> <li>• \$5k fine</li> <li>• 5-day ban</li> </ul>
<a href="#">COMEX 20-1268-BC</a>	2021	<ul style="list-style-type: none"> <li>• Wash trades</li> <li>• NM</li> <li>• 50k</li> <li>• 2-year suspension</li> </ul>
<a href="#">COMEX 20-1285-BC</a>	2021	<ul style="list-style-type: none"> <li>• Firm submitted multiple block trades in gold futures and options with inaccurate execution</li> <li>• Blocks not submitted within required time</li> <li>• Failure to advise and train employees</li> <li>• NM</li> <li>• Settlement</li> <li>• \$50k</li> </ul>
<a href="#">COMEX 19-1156-BC-1</a>	2021	<ul style="list-style-type: none"> <li>• Individual hedged OTC trades with futures prior to executing OTC trades with counterparty</li> <li>• Traded opposite counterparty's Globex order in less than 5 seconds</li> <li>• Form of pre-arranged trading</li> <li>• Gold or silver</li> <li>• Multiple occasions</li> <li>• NM</li> <li>• Settlement</li> <li>• \$15k fine</li> <li>• 5-day ban</li> </ul>
<a href="#">COMEX 19-1156-BC-2</a>	2021	<ul style="list-style-type: none"> <li>• Entity that employed individual referred to in the prior case</li> <li>• Failure to supervise</li> </ul>

Appendix D

Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Failure to train</li> <li>• NM</li> <li>• Settlement</li> <li>• \$30k fine</li> </ul>
<a href="#">COMEX 20-1306-BC</a>	2021	<ul style="list-style-type: none"> <li>• Pre-arranged execution of round turn transactions</li> <li>• Options in silver transactions</li> <li>• Between personal account and employer's account</li> <li>• Purpose of transferring equity between account</li> <li>• Failure to submit a written answer to charge</li> <li>• NM</li> <li>• \$60k fine</li> <li>• 3-year ban</li> </ul>
<a href="#">COMEX 20-1336-BC</a>	2021	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing style activity</li> <li>• Silver futures</li> <li>• From late March 2020 to mid-May</li> <li>• NM</li> <li>• Settlement</li> <li>• \$35k fine</li> <li>• 30-day ban</li> </ul>
<a href="#">COMEX 20-1333-BC</a>	2021	<ul style="list-style-type: none"> <li>• Entity executed various block trades in gold but failed to report during time period</li> <li>• Failed to report accurate trade details</li> <li>• Failure to supervise</li> <li>• Between January – April 2020</li> <li>• NM</li> <li>• \$75k fine</li> </ul>
<a href="#">COMEX 20-1390-BC</a>	2021	<ul style="list-style-type: none"> <li>• Individual placed opposing orders for gold and silver future contracts</li> <li>• Traded opposite each other – knowledge and intent this would happen</li> <li>• Purpose of rebalancing positions – not bona fide trading</li> <li>• Two dates</li> <li>• NM</li> <li>• Settlement</li> <li>• \$20k fine</li> <li>• 10-day ban</li> </ul>
<a href="#">COMEX 20-1358-BC-1</a>	2021	<ul style="list-style-type: none"> <li>• Individual executed numerous wash trades in gold futures between accounts with common beneficial ownership</li> <li>• Purpose to transfer positions</li> <li>• Two dates</li> <li>• NM</li> <li>• Settlement</li> </ul>

Appendix D

Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• \$10k fine</li> <li>• 10-day ban</li> </ul>
<a href="#">COMEX 20-1358-BC-2</a>	2021	<ul style="list-style-type: none"> <li>• Individual executed numerous wash trades in gold futures between accounts with common beneficial ownership</li> <li>• Purpose to transfer positions</li> <li>• Two dates</li> <li>• NM</li> <li>• Settlement</li> <li>• \$25k fine</li> <li>• 10-day ban</li> </ul>
<a href="#">COMEX 20-1331-BC</a>	2021	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Gold futures</li> <li>• M</li> <li>• \$2.5k fine</li> <li>• 3-month ban</li> </ul>
<b>Total penalties 2021</b>	<b>Total penalties 2021</b>	<b>\$377,500</b>
Total volumes 31/12/21	Total volumes 31/12/21	<b>ADV 488,000 (contracts, rd turn, notional value)</b>
Post-tax profit 31/12/21	Post-tax profit 31/12/21	Not published separately
2021 themes	2021 themes	Non-bona fide trading (x3), failure to supervise (x3), pre-arranged/wash trading (x4), trading less than 5 seconds (x1), block trade breaches (x2), layering/spoofing (x2), personal account dealing / conflict of interest (x1). Prehedging clients (x1)
<a href="#">COMEX 21-1451-BC</a>	2022	<ul style="list-style-type: none"> <li>• Individual pre-arranged series of round turn transactions in copper</li> <li>• Between account owned and an account controlled</li> <li>• To transfer equity between accounts</li> <li>• Used another trades unique Globex ID to do this</li> <li>• NM</li> <li>• \$20k fine</li> <li>• 5 day fine</li> </ul>
<a href="#">COMEX 20-1305-BC</a>	2022	<ul style="list-style-type: none"> <li>• Individual engaged in fraud and dishonest conduct</li> <li>• Took positions in copper futures to offset against orders placed for employer</li> <li>• Took advantage of proprietary information to front run for benefit of personal account</li> <li>• Failure to respond</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• NM</li> <li>• \$200k fine</li> <li>• \$177,625 disgorgement</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 21-1422-BC-1</a>	2022	<ul style="list-style-type: none"> <li>• Entity's employees entered and cancelled orders in gold and micro gold futures for purpose of testing not executing bona fide transactions</li> <li>• Pre-open period</li> <li>• Caused fluctuations in publicly delayed Indicative Opening Price</li> <li>• Market Regulation notified firm of issue, but employees just carried on anyway</li> <li>• Failure to supervise or train</li> <li>• NM</li> <li>• Settlement</li> <li>• \$75k fine</li> </ul>
<a href="#">COMEX 21-1422-BC-2</a>	2022	<ul style="list-style-type: none"> <li>• Employee in abovementioned case</li> <li>• NM</li> <li>• Settlement</li> <li>• \$7.5k fine</li> <li>• 15-day ban</li> </ul>
<a href="#">COMEX 21-1409-BC</a>	2022	<ul style="list-style-type: none"> <li>• Individual pre-arranged series of round turn transactions in copper</li> <li>• Between personal account owned and an account controlled</li> <li>• To transfer equity between accounts</li> <li>• NM</li> <li>• Settlement</li> <li>• \$25k fine</li> <li>• Disgorgement (\$2,730)</li> <li>• 30-day ban</li> </ul>
<a href="#">COMEX 19-1158-BC</a>	2022	<ul style="list-style-type: none"> <li>• Entity engaged in pre-hedging activity</li> <li>• Failed to make clear to counterparty trading in principal capacity / taking the other side in block trade negotiations</li> <li>• Enabled entity to profit</li> <li>• M</li> <li>• \$125k fine</li> <li>• Disgorgement \$10,825</li> </ul>
<a href="#">COMEX 17-0821-BC</a>	2022	<ul style="list-style-type: none"> <li>• Entity failed to report block trades in COMEX metal products</li> <li>• Between May 2017 and February 2018</li> <li>• Continuous pattern of inaccurate or late reporting</li> <li>• Failure to train or supervise</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Provided inaccurate records and irrelevant communications during investigation</li> <li>• Failed to comply with due dates in Market Regulation for almost a year. Failed to seek deadline extensions, just disregarded</li> <li>• NM</li> <li>• \$85k fine</li> </ul>
<a href="#">COMEX 20-1273-BC-1</a>	2022	<ul style="list-style-type: none"> <li>• Submitted multiple block trades with inaccurate execution times</li> <li>• Failed to report multiple block trades to the Exchange within the required time following execution in various gold and silver futures contracts</li> <li>• Each party's decision to enter the block trade was not made by an independent decision maker</li> <li>• One block trade executed between accounts with common beneficial ownership</li> <li>• Each party's decision to enter the block trade was not made by an independent decision maker</li> <li>• Several occasions between November 2019 and April 2020</li> <li>• Provided inaccurate records and irrelevant communications during investigation</li> <li>• Failure to supervise and train staff properly</li> <li>• M</li> <li>• Settlement</li> <li>• \$50k fine</li> </ul>
<a href="#">COMEX 20-1386-BC-1</a>	2022	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing style activities</li> <li>• Used another person's Globex ID</li> <li>• Failure to answer charges</li> <li>• NM</li> <li>• \$60k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 20-1386-BC-2</a>	2022	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing style activities</li> <li>• Used another person's Globex ID</li> <li>• Failure to answer charges</li> <li>• NM</li> <li>• \$75k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 20-1386-BC-3</a>	2022	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing style activities</li> <li>• Failure to answer charges</li> <li>• NM</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• \$75k fine</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">COMEX 19-1195-BC-1</a>	2022	<ul style="list-style-type: none"> <li>• In conjunction with another market participant trading for the same account, individual entered orders for Gold and Silver Futures calendar spreads with reckless disregard for the impact on the orderly conduct of trading or the fair execution of transactions.</li> <li>• On numerous occasions, individual and his trading partner placed orders for what amounted to large quantities on both sides of the market followed by an aggressive order (“Flipping Order”) to buy (sell) all the quantity resting at the best offer (bid). Individual used a wash blocker to cancel the resting orders opposite the Flipping Order, typically within one millisecond, which would trade immediately and turn the market.</li> <li>• Aggressive order contained enough to fill all contracts resting at the best offer (bid), as well as leaving excess quantity resting after such fills, he created a best new bid (offer) with the remaining quantity, thus, “flipping” the market. Since individual’s resting and cancelled orders comprised a large percentage of the best bid or offer, his use of the wash blocker impacted other market participants’ ability to trade at any price beyond his resting orders.</li> <li>• M</li> <li>• Settlement</li> <li>• \$110k fine</li> <li>• 10-day ban</li> </ul>
<a href="#">COMEX 19-1195-BC-2</a>	2022	<ul style="list-style-type: none"> <li>• Individual who collaborated with individual in above case</li> <li>• M</li> <li>• Settlement</li> <li>• \$50k</li> <li>• 10-day ban</li> </ul>
<a href="#">COMEX 21-1449-BC-1</a>	2022	<ul style="list-style-type: none"> <li>• Firm did not adequately manage the operator IDs that certain of its employees used to execute trades, including failing to keep accurate record of the operator IDs that certain of its employees used when entering orders, providing inconsistent information to the Exchange regarding the operator IDs its employees traded through, and permitting multiple employees to enter orders using the same operator .</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• December 1, 2020, and January 12, 2021, a trader employed by the firm entered orders with the intent, at the time of order entry, to cancel the orders before execution or to modify the orders to avoid execution in the February 2021 Gold futures market. The Panel also found that the firm failed to diligently supervise trading by such employees despite receiving comments from the Exchange regarding possible disruptive trading activity and not taking sufficient steps to address the activity.</li> <li>• M</li> <li>• Settlement</li> <li>• \$150k fine</li> </ul>
<a href="#">COMEX 21-1449-BC-2</a>	2022	<ul style="list-style-type: none"> <li>• Executing trader in above case</li> <li>• NM</li> <li>• \$75k</li> <li>• 6-month ban</li> </ul>
<a href="#">COMEX 20-1381-BC-1</a>	2022	<ul style="list-style-type: none"> <li>• Individual prearranged the purchase or sale or noncompetitively executed transactions in the gold futures market.</li> <li>• Failure to answer charge.</li> <li>• NM</li> <li>• \$40k fine</li> <li>• 1 year ban</li> </ul>
<a href="#">COMEX 19-1223-BC</a>	2022	<ul style="list-style-type: none"> <li>• Individual entered actionable messages in various Silver, Copper, and gold futures with the intent to mislead other market participants and receive favourable pricing.</li> <li>• Individual exhibited a pattern of order entry and modification that alternated between creating buy-side pressure and sell-side pressure to induce market participants to trade into his resting quantity on the opposite side of the market.</li> <li>• Individual subsequently entered new orders or modified resting orders to create a disproportionate quantity of contracts on one side of the market at the top levels of the order book. The imbalance induced market participants to trade into orders he entered or modified on the opposite side of the market or allowed him to aggress into resting orders at beneficial prices after the market turned because of his two-sided layered quantities.</li> <li>• In instances where individual's order modifications created a sudden absence of resting quantity at the top of the order book, individual induced market participants to either trade into his resting orders on</li> </ul>

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Ref	Year	Summary
		<p>the same side of the order book where most of his exposure existed or, alternatively, he traded into other market participants' resting orders following a beneficial price move caused by his order modifications.</p> <ul style="list-style-type: none"> <li>• Failure to appear and answer charge.</li> <li>• NM</li> <li>• \$30k fine</li> <li>• <b>Permanent ban</b></li> <li>• Disgorgement \$889,182.50</li> </ul>
<a href="#">COMEX 19-1220-BC</a>	2022	<ul style="list-style-type: none"> <li>• Entity impeded the Exchange's investigation into trading activity of entity's customers by: (1) failing to have appropriate policies and procedures pertaining to the creation, maintenance, and monitoring of operator IDs assigned to its customers; (2) as a result of Grand permitting its customers to create their own operator IDs via a third-party software vendor, being unable to identify Globex Terminal Operators who used these operator IDs; and (3) permitting, without remediation, multiple individuals to enter orders in the Gold, Copper, and Silver contract markets using the same operator IDs.</li> <li>• By allowing its customers to repeatedly create operator IDs via the third-party software vendor, Grand removed its ability to identify and track those customers who sent messages to the Exchange under these operator IDs.</li> <li>• NM</li> <li>• Settlement</li> <li>• \$160k fine</li> </ul>
<a href="#">COMEX 20-1380-BC</a>	2022	<ul style="list-style-type: none"> <li>• Individual operated a futures trading program that allocated trades to its participants at the end of each trading day according to individual allocation schemes. From August 10, 2020, through August 13, 2020, individual placed uncharacteristically large and unprofitable trades on behalf of his customers. By the close of trading on August 10, 2020, most of the accounts individual traded were debit. On August 11, 2020, following additional losses, several introducing brokers at the behest of their clients directed individual to suspend trading their clients' accounts or set their accounts to liquidation-only status. Individual assured the introducing brokers that he would only place orders to liquidate existing positions. However, individual entered unauthorized</li> </ul>



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Ref	Year	Summary
		<p>trades in the December 2020 Gold futures market, which resulted in additional losses for those customers. As a result, by August 12, 2020, all but one customer ceased participating in individual's futures trading program. Individual continued to place large unprofitable trades on behalf of the remaining customer until his executing broker liquidated the customer's large positions and disabled individual's access to the broker's trading platform on August 13, 2020.</p> <ul style="list-style-type: none"> <li>• NM</li> <li>• Settlement</li> <li>• \$50k fine</li> <li>• Pay \$287,492.69</li> <li>• Permanent ban from servicing customers</li> <li>• 5-year ban from access to the exchange</li> </ul>
<b>Total penalties 2022</b>	<b>Total penalties 2022</b>	<b>\$1,462,500</b>
Total volumes 31/12/22	Total volumes 31/12/22	<b>ADV 521,000 (contracts, rd turn, notional value)</b>
Post-tax profit 31/12/22	Post-tax profit 31/12/22	Not published separately
2022 themes	2022 themes	Failure to supervise (x4), pre-arranged/wash trading (x2), failure to appear (5), trading ahead (x1), Globex ID issues (x3), layering and spoofing type activities (x8), disruptive trading (x1), personal account dealing / conflict of interest issues (2), pre-hedging customer orders (x1), testing in production (x2), block trade breaches (x2)

**COMEX - REC 2.15.3**

Factors	Occasions
Take appropriate disciplinary action against members in breach of its rules (and settlement arrangements, where appropriate):	75
Suspend (a member's) access to its facilities:	155 of which 64 permanent
Refer members' or others' conduct to other appropriate authorities for possible action or further investigation:	See below
Where appropriate, enforce its rules (and settlement arrangements, where appropriate) against users (other than members) of its facilities:	172
Act against suppliers of services to members (for example, warehouses) whose performance or conduct may be critical to	0

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ensuring compliance with its rules (and settlement arrangements, where appropriate):	
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Issue type	Count
Warehousing, grading issues or physical related breach	0
Non-compliance with block trading rules	10
Non-compliance with rules governing EFS or EFP	10
Non-compliance with rules governing annual returns or attestations	0
Inadequate trade surveillance systems and controls	1
Position limit related breach	8
Reckless, disruptive, or disorderly trading	5
Position transfer breach	0
Layering and spoofing type behaviour and other deceptive practices including entering orders without intent to trade	77
Prearranged trading	1
Timely close out failure or open interest breach	2
Failure to take delivery or deliver	0
Large trader reporting, open interest, or position reporting failure / breach	1
Failure to setup registry trust account	0
Retrospective submission of orders	0
Failure to use taped line	0
Front running, pre-hedging, and improper personal account dealing / cherry picking	13
Failure to settle options by deadline	0
Cross trade matching failure / enter trade outside limit	0
Order feed issue	0
Record keeping breach	4
Failure to expose for 5 seconds	7
Failure to use unique IDs or sharing them (Globex / Tag 50)	32
Failure to comply with exemption terms	0

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Issue type	Count
Failure to exercise due diligence	1
ATS/auto spreader malfunction / improper oversight	2
Failure to supervise or have proper procedures	35
Wash / accommodation or non bonafide trades	55
Failure to appear or answer	71
Disclosure of customer ID without consent	0
Failure to pay penalty / provide timely proof of payment	1
Booking trades at off market rates	0
Trading customer accounts without consent	1
Knowing provision of misstatements	2
Failure to provide accurate owner and control information	1
Bypassing exchange controls	1
Use of bad language towards exchange staff	1
Violation of cease and desist	1
Failure to submit accurate CTI codes	8
Directing others to commit breach	1
Testing in production	2
Pre-execution communication non-compliance	1
Allowing others to access trading system	1

## Appendix E: Summary of ICE EU disciplinary notices

Note: these are summaries and excerpts from actual enforcement notices, tabulated for analysis.

Total volumes 31/12/07	<ul style="list-style-type: none"> <li>• 138,471,006 contracts</li> </ul>
Post-tax profit 31/12/07	<ul style="list-style-type: none"> <li>• \$114,688,000</li> </ul>
Total volumes 31/12/08	<ul style="list-style-type: none"> <li>• 152,950,133 contracts</li> </ul>
Post-tax profit 31/12/08	<ul style="list-style-type: none"> <li>• \$112,250,000</li> </ul>
Total volumes 31/12/09	<ul style="list-style-type: none"> <li>• 165,725,488 contracts</li> </ul>
Post-tax profit 31/12/09	<ul style="list-style-type: none"> <li>• \$134,559,000</li> </ul>

Ref	Year	Summary
<a href="#">10042</a>	2010	<ul style="list-style-type: none"> <li>• Position limit breach</li> <li>• ICE WTI futures</li> <li>• “Third strike”</li> <li>• M</li> <li>• £50k fine</li> <li>• Maximum possible</li> </ul>
<a href="#">10091</a>	2010	<ul style="list-style-type: none"> <li>• Overstatement of open interest</li> <li>• Failed to close out positions in WTI</li> <li>• Individual’s oversight resulted in error</li> <li>• M</li> <li>• £30k fine</li> <li>• Previous breaches</li> </ul>

<b>Total penalties 2010</b>	<ul style="list-style-type: none"> <li>• £70k</li> </ul>
Total volumes 31/12/10	<ul style="list-style-type: none"> <li>• 217,192,000 contracts</li> </ul>
Post-tax profit 31/12/10	<ul style="list-style-type: none"> <li>• \$160,749,000</li> </ul>
2010 themes	<ul style="list-style-type: none"> <li>• Position limit breach (x1), timely close out failure (x1)</li> </ul>

Ref	Year	Summary
<a href="#">11048</a>	2011	<ul style="list-style-type: none"> <li>• Failure to appropriately close out WTI crude positions in expiry month, leading to overstatement</li> <li>• Caused by human error</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Previous breaches</li> <li>• M</li> <li>• £30k</li> </ul>
<a href="#">11047</a>	2011	<ul style="list-style-type: none"> <li>• Failure to appropriately close out positions in Gasoil, leading to overstatement of open interest</li> <li>• Previous breaches</li> <li>• M</li> <li>• £50k fine</li> <li>• Caused by human error</li> </ul>
<a href="#">11055</a>	2011	<ul style="list-style-type: none"> <li>• Employee tried to book EFS contract with supporting documentation, tried to change to block when challenged</li> <li>• No underlying OTC transaction</li> <li>• Difference between block trade and EFS not fully understood by employee, failed to follow internal policy</li> <li>• M</li> <li>• £20k fine</li> </ul>
<a href="#">11054</a>	2011	<ul style="list-style-type: none"> <li>• Failure to submit large trader positions before close of business on two dates</li> <li>• Tried to remediate but unsuccessful because operational department failed to relay message to relevant internal department</li> <li>• Mitigation attempt to remediate</li> <li>• M</li> <li>• £5k fine</li> </ul>
<a href="#">11053</a>	2011	<ul style="list-style-type: none"> <li>• Failure to submit large trader positions on a US national bank holiday as no positions would have been generated on that day</li> <li>• Previous breaches</li> <li>• Remedial action to prevent future breaches</li> <li>• M</li> <li>• £5k fine</li> </ul>
<a href="#">11070</a>	2011	<ul style="list-style-type: none"> <li>• Six “price spikes” in April 11 Brent/WTI spread</li> <li>• Limit order and several large market orders place in quick succession by trader</li> <li>• Aggressive / disorderly trading distorting price impact</li> <li>• No evidence of intentional manipulation after examining logs</li> <li>• M</li> <li>• £25k fine</li> </ul>
<a href="#">11069</a>	2011	<ul style="list-style-type: none"> <li>• Member failed to complete close out procedure by 10am cut off time on several occasions</li> <li>• Delayed exchange in calculating open interest</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Additional load during month end processing and technical issues</li> <li>• Remedial steps taken</li> <li>• M</li> <li>• £20k fine</li> </ul>
<a href="#">11068</a>	2011	<ul style="list-style-type: none"> <li>• Member failed to complete close out procedure by 10am cut off time on several occasions</li> <li>• Delayed exchange in calculating open interest</li> <li>• Remedial steps taken</li> <li>• M</li> <li>• £15k fine</li> </ul>
<a href="#">11112</a>	2011	<ul style="list-style-type: none"> <li>• Failure by client to take delivery of gasoil</li> <li>• M</li> <li>• Fixed fine \$13140 (Oanda: £8,422.42)</li> </ul>
<a href="#">11111</a>	2011	<ul style="list-style-type: none"> <li>• Failure by client to take delivery of gasoil</li> <li>• M</li> <li>• Fixed fine \$13959.75 (Oanda: £8,947.86)</li> </ul>
<a href="#">11110</a>	2011	<ul style="list-style-type: none"> <li>• Failure to accurately complete close out procedure by 10am cut off</li> <li>• Similar previous incidents</li> <li>• Exchange published overstated open interest figures</li> <li>• M</li> <li>• £20k fine</li> </ul>
<a href="#">11162</a>	2011	<ul style="list-style-type: none"> <li>• Member failed to complete close out procedure by 10am cut off time – WTI futures contract</li> <li>• Exchange published an overstatement of open interest</li> <li>• Remedial steps taken</li> <li>• M</li> <li>• £10k fine</li> </ul>
<a href="#">11161</a>	2011	<ul style="list-style-type: none"> <li>• Member failed to complete close out procedure by 10am cut off time – WTI futures contract</li> <li>• Exchange published an overstatement of open interest</li> <li>• Remedial steps taken</li> <li>• M</li> <li>• £10k fine</li> </ul>
<a href="#">11160</a>	2011	<ul style="list-style-type: none"> <li>• Member failed to complete close out procedure by 10am cut off time – WTI futures contract</li> <li>• Exchange published an overstatement of open interest</li> <li>• Remedial steps taken</li> <li>• M</li> <li>• £10k fine</li> </ul>

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<b>Total penalties 2011</b>	<ul style="list-style-type: none"> <li>• £237,370.28k</li> </ul>
Total volume 31/12/11	<ul style="list-style-type: none"> <li>• 268,994,000 contracts</li> </ul>
Post-tax profit 31/12/11	<ul style="list-style-type: none"> <li>• \$196,320,000</li> </ul>
2011 themes	<ul style="list-style-type: none"> <li>• Timely close out failure (x9), failure to take delivery (x2), aggressive/disorderly trading (x1), LTR failure (x2), EFS breach (x1)</li> </ul>

Ref	Year	Summary
<a href="#">12013</a>	2012	<ul style="list-style-type: none"> <li>• Member failed to complete close out procedure by 10am cut off time – WTI futures contract</li> <li>• Exchange published an overstatement of open interest</li> <li>• Static data error</li> <li>• Remedial steps taken</li> <li>• M</li> <li>• £10k fine</li> </ul>
<a href="#">12021</a>	2012	<ul style="list-style-type: none"> <li>• Client engaged in disorderly trading</li> <li>• Exchange detected placement and withdrawal of 11k lots of gasoil within 13 minutes</li> <li>• Placed by individual trader</li> <li>• No explanation for strategy</li> <li>• No absolute risk limits in place, but “fat finger” limits set</li> <li>• No client documentation covering order routing provided, client of circa 20 years</li> <li>• No mitigation</li> <li>• M</li> <li>• £20k fine</li> </ul>
<a href="#">12032</a>	2012	<ul style="list-style-type: none"> <li>• Failure to set up requisite registry account</li> <li>• Emissions contract expired but nowhere to allocate</li> <li>• M</li> <li>• €19147.50 / 1% contract value fine (Oanda £15,935.30)</li> </ul>
<a href="#">12031</a>	2012	<ul style="list-style-type: none"> <li>• Failure to take delivery of UK natural gas</li> <li>• Client unable to meet delivery obligations</li> <li>• M</li> <li>• £1805.13, 1% of contract value</li> </ul>
<a href="#">12083</a>	2012	<ul style="list-style-type: none"> <li>• Failure by client to take delivery of Gasoil</li> <li>• M</li> <li>• Fine \$206,476.50, 1% contract value (Oanda £132,542)</li> </ul>
<a href="#">12185</a>	2012	<ul style="list-style-type: none"> <li>• Failure to set ICE EU as trusted account at registry</li> <li>• Unable to transfer contracts</li> <li>• M</li> </ul>



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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• £1k fine</li> </ul>
<a href="#">12190</a>	2012	<ul style="list-style-type: none"> <li>• Failure to accurately complete close out procedure by 10am cut off, several incidents</li> <li>• Delayed calculation of open interest</li> <li>• Remedial steps</li> <li>• M</li> <li>• £15k fine</li> </ul>
<a href="#">12189</a>	2012	<ul style="list-style-type: none"> <li>• Failure to accurately complete close out procedure by 10am cut off</li> <li>• First offence</li> <li>• Personnel did not follow procedure correctly or take heed of warnings</li> <li>• M</li> <li>• £10k fine</li> </ul>
<a href="#">12188</a>	2012	<ul style="list-style-type: none"> <li>• Failure to accurately complete close out procedure by 10am cut off, several previous occasions</li> <li>• Exchange delayed calculation of open interest</li> <li>• Remedial action taken</li> <li>• M</li> <li>• £25k fine</li> </ul>
<a href="#">12187</a>	2012	<ul style="list-style-type: none"> <li>• Failure to accurately complete close out procedure by 10am cut off, several previous occasions</li> <li>• Exchange delayed calculation of open interest 26</li> <li>• Remedial action taken</li> <li>• M</li> <li>• £15k fine</li> </ul>

<b>Total penalties 2012</b>	<ul style="list-style-type: none"> <li>• £246,282.43</li> </ul>
Total volume 31/12/12	<ul style="list-style-type: none"> <li>• 295,824,000 contracts</li> </ul>
Post-tax profit 31/12/12	<ul style="list-style-type: none"> <li>• \$129,479,000</li> </ul>
2012 themes	<ul style="list-style-type: none"> <li>• Timely close out failure (x5), failure to setup registry trust account (x2), disorderly trading (x1), failure to take delivery (x2)</li> </ul>

Ref	Year	Summary
<a href="#">13048</a>	2013	<ul style="list-style-type: none"> <li>• Failure to accurately complete close out procedure by 10am cut off</li> <li>• Remedial action taken</li> <li>• M</li> <li>• £5k fine</li> </ul>
<a href="#">13047</a>	2013	<ul style="list-style-type: none"> <li>• Retrospective submission of trade at settlement orders</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Trader had setup system to submit orders prior to pre-trading session open</li> <li>• Not conducive to maintenance of an orderly market</li> <li>• Member took disciplinary procedures against its trader, no incidents since this</li> <li>• M</li> <li>• £5k fine</li> </ul>
<a href="#">13052</a>	2013	<ul style="list-style-type: none"> <li>• Failure to deliver ICE EU CER and EUA contracts upon expiry</li> <li>• Error, contracts held in holding accounts rather than trading accounts for each client</li> <li>• M</li> <li>• £5k fine</li> </ul>
<a href="#">13051</a>	2013	<ul style="list-style-type: none"> <li>• Failure to deliver ICE EUA contract</li> <li>• Transfer to member from client wasn't issued until two days after expiry</li> <li>• Member missed deadline, couldn't deliver</li> <li>• M</li> <li>• £5k fine</li> </ul>
<a href="#">13053</a>	2013	<ul style="list-style-type: none"> <li>• Failure to accurately complete close out procedure by 10am cut off</li> <li>• Exchange published an overstatement of open interest</li> <li>• Static data change led to incorrect reports being generated to initiate close out procedure</li> <li>• Previous failures</li> <li>• Remedial action taken</li> <li>• M</li> <li>• £50k fine</li> </ul>
<a href="#">13086</a>	2013	<ul style="list-style-type: none"> <li>• Client engaged in disorderly trading</li> <li>• Placement, cancellation, and replacement of multiple large spread orders (1,999 lot clips totalling over 20 lots) in ICE Brent spread in 55 minutes</li> <li>• Placed by individual trader at DEA client</li> <li>• Client said some orders duplicated in error</li> <li>• Filled on 2,000 lots</li> <li>• Client did not provide satisfactory account or reasonable commercial rationale</li> <li>• Member takes responsibility for client's actions</li> <li>• Within trading limits established for client</li> <li>• Has not been repeated since</li> <li>• Orders made available to market for relatively long period of time</li> <li>• Member had no reason to doubt orders genuine, felt client's explanation valid</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>Orders large compared to client's usual trading and market as a whole</li> <li>M</li> <li>£10k fine</li> </ul>
<a href="#">13109 D01</a>	2013	<ul style="list-style-type: none"> <li>Responsible individual fined</li> <li>Failure to conduct a telephone conversation on a taped line when taking client orders</li> <li>Used unrecorded mobile line</li> <li>M – RI*</li> <li>Written warning issued</li> </ul>
<a href="#">13111 D02</a>	2013	<ul style="list-style-type: none"> <li>Failure to set up requisite registry account</li> <li>Emissions contract expired but nowhere to allocate</li> <li>First breach of these rules</li> <li>Member expended lot of effort to resolve</li> <li>M</li> <li>Formal warning</li> </ul>
<a href="#">13137 D03</a>	2013	<ul style="list-style-type: none"> <li>Failure to deliver CER contract within delivery period and manage client positions appropriately</li> <li>Misunderstanding – client net but independent at member</li> <li>M</li> <li>Formal warning</li> <li>£5k fine</li> </ul>

<b>Total penalties 2013</b>	<ul style="list-style-type: none"> <li>£85,000</li> </ul>
Total volume 31/12/13	<ul style="list-style-type: none"> <li>315,711,000 contracts</li> </ul>
Post-tax profit 31/12/13	<ul style="list-style-type: none"> <li>\$48,979,000</li> </ul>
2013 themes	<ul style="list-style-type: none"> <li>Failure to complete close out (x2), retrospective submission of orders (x1), failure to deliver (x3), failure to setup registry account (x1), disorderly trading (x1), failure to use taped line (x1)</li> </ul>

Ref	Year	Summary
<a href="#">14017 D01</a>	2014	<ul style="list-style-type: none"> <li>Five breaches – failure to close out positions by 10am cut off time</li> <li>Led to delays in calculating open interest and, on two occasions, open interest being overstated</li> <li>Failure of outsourced IT services</li> <li>Human error</li> <li>Incorrect client setup</li> <li>M</li> <li>Settlement</li> <li>Substantive remedial action</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• £30k penalty</li> </ul>
<a href="#">14079 D02</a>	2014	<ul style="list-style-type: none"> <li>• Front running client orders in EUA emissions nine times</li> <li>• Proprietary position first then OTC to client</li> <li>• Did not act in best interests of client</li> <li>• Lack of understanding, no malicious intent</li> <li>• No apparent personal benefit</li> <li>• Clients reimbursed</li> <li>• Internal disciplinary proceedings</li> <li>• CF30 status revoked</li> <li>• Foregoing bonus</li> <li>• M (RI)*</li> <li>• Suspended from all client facing activities since breach occurred</li> <li>• <b>3-month suspension</b></li> <li>• Personal fine of £15k, reduced to £3.5k because of high levels of co-operation by employee and employer and heavy internal financial sanctions taken by employer</li> </ul>

<b>Total penalties 2014</b>	<ul style="list-style-type: none"> <li>• £33,500</li> </ul>
Total volume 31/12/14	<ul style="list-style-type: none"> <li>• 391,135,000 contracts</li> </ul>
Post-tax profit 31/12/14	<ul style="list-style-type: none"> <li>• \$66,457,000</li> </ul>
Total volume 31/12/15	<ul style="list-style-type: none"> <li>• 896,311,000 contracts</li> </ul>
Post-tax profit 31/12/15	<ul style="list-style-type: none"> <li>• \$139,876,000</li> </ul>
2015 themes	<ul style="list-style-type: none"> <li>• Timely close out failure (x1), front running (x1)</li> </ul>

Ref	Year	Summary
<a href="#">16155</a>	2016	<ul style="list-style-type: none"> <li>• Failure to settle options contracts by required deadline</li> <li>• Several occasions</li> <li>• M</li> <li>• £1k fine</li> </ul>
<a href="#">16154</a>	2016	<ul style="list-style-type: none"> <li>• Failure to settle options contracts by required deadline</li> <li>• Several occasions</li> <li>• M</li> <li>• £1k fine</li> </ul>
<a href="#">16153</a>	2016	<ul style="list-style-type: none"> <li>• Failure to settle options contracts by required deadline</li> <li>• Several occasions</li> <li>• M</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• £1k fine</li> </ul>
<a href="#">16152</a>	2016	<ul style="list-style-type: none"> <li>• Failure to settle options contracts by required deadline</li> <li>• Several occasions</li> <li>• M</li> <li>• £1k fine</li> </ul>
<a href="#">16151</a>	2016	<ul style="list-style-type: none"> <li>• Failure to settle options contracts by required deadline</li> <li>• Several occasions</li> <li>• M</li> <li>• £1k fine</li> </ul>
<a href="#">16150</a>	2016	<ul style="list-style-type: none"> <li>• Failure to settle options contracts by required deadline</li> <li>• Several occasions</li> <li>• M</li> <li>• £1k fine</li> </ul>
<a href="#">16149</a>	2016	<ul style="list-style-type: none"> <li>• Failure to settle options contracts by required deadline</li> <li>• Several occasions</li> <li>• M</li> <li>• £1k fine</li> </ul>
<a href="#">16148</a>	2016	<ul style="list-style-type: none"> <li>• Failure to settle options contracts by required deadline</li> <li>• Several occasions 45(2)</li> <li>• M</li> <li>• £1k fine</li> </ul>

<b>Total penalties 2016</b>	<ul style="list-style-type: none"> <li>• £8,000</li> </ul>
Total volume 31/12/16	<ul style="list-style-type: none"> <li>• 966,239,000 contracts</li> </ul>
Post-tax profit 31/12/16	<ul style="list-style-type: none"> <li>• \$76,582,000</li> </ul>
2016 themes	<ul style="list-style-type: none"> <li>• Failure to settle options by deadline (x8)</li> </ul>

Ref	Year	Summary
<a href="#">17095</a>	2017	<ul style="list-style-type: none"> <li>• Failure to operate in accordance with grading and warehouse procedures</li> <li>• Sampling London Cocoa</li> <li>• Remedial action taken</li> <li>• Fine £33,333</li> </ul>
<a href="#">17103</a>	2017	<ul style="list-style-type: none"> <li>• Failure to operate in accordance with grading and warehouse procedures</li> <li>• Sampling London Cocoa</li> <li>• Written warning</li> </ul>

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Ref	Year	Summary
<a href="#">17102</a>	2017	<ul style="list-style-type: none"> <li>• Failure to operate in accordance with grading and warehouse procedures</li> <li>• Robusta Coffee</li> <li>• £50k fine</li> </ul>
<a href="#">17187</a>	2017	<ul style="list-style-type: none"> <li>• Failure to meet seller's delivery notification deadline white sugar futures</li> <li>• M</li> <li>• £1k fine</li> </ul>

<b>Total penalties 2017</b>	<ul style="list-style-type: none"> <li>• £84,333</li> </ul>
Total volume 31/12/17	<ul style="list-style-type: none"> <li>• 1,158,498,000 contracts</li> </ul>
Post-tax profit 31/12/17	<ul style="list-style-type: none"> <li>• \$120,280,000</li> </ul>
2017 themes	<ul style="list-style-type: none"> <li>• Grading/warehouse failure (x3), failure to meet delivery notification deadline (x1)</li> </ul>

Ref	Year	Summary
<a href="#">18169</a>	2018	<ul style="list-style-type: none"> <li>• Failure to operate in accordance with grading and warehouse procedures</li> <li>• Warrants not removed from Guardian system when goods removed from warehouse</li> <li>• £8k fine</li> </ul>
<a href="#">18168</a>	2018	<ul style="list-style-type: none"> <li>• Failure to operate in accordance with grading and warehouse procedures</li> <li>• Warrants not removed from Guardian system when goods removed from warehouse</li> <li>• £8k fine</li> </ul>

<b>Total penalties 2018</b>	<ul style="list-style-type: none"> <li>• £16,000</li> </ul>
Total volume 31/12/18	<ul style="list-style-type: none"> <li>• 1,265,448,000</li> </ul>
Post-tax profit 31/12/18	<ul style="list-style-type: none"> <li>• \$106,707,000</li> </ul>
2018 themes	<ul style="list-style-type: none"> <li>• Grading/warehouse failure (x2)</li> </ul>

Ref	Year	Summary
<a href="#">19035</a>	2019	<ul style="list-style-type: none"> <li>• Failure to produce underlying EFP contracts</li> <li>• Client</li> <li>• Settlement</li> <li>• £13,333.33 fine after 1/3 discount</li> </ul>
<a href="#">19047</a>	2019	<ul style="list-style-type: none"> <li>• Error duplication of two block trades</li> <li>• Used EFS facility twice to try and resolve</li> <li>• No swap transactions</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• £40,000 fine after 1/3 discount</li> </ul>
<a href="#">19106</a>	2019	<ul style="list-style-type: none"> <li>• Suspension of warehouse company from storage of Cocoa and Robusta Coffee</li> <li>• Not complying with grading and warehousing procedures</li> <li>• £30k fine after a 1/3 discount</li> </ul>
<a href="#">19105</a>	2019	<ul style="list-style-type: none"> <li>• Not complying with grading and warehousing procedures</li> <li>• £6,667 fine after a 1/3 discount</li> </ul>
<a href="#">19153</a>	2019	<ul style="list-style-type: none"> <li>• Disruptive, reckless, and disorderly trading activity</li> <li>• Low Sulphur Gasoil contract on behalf of client</li> <li>• Spike in calendar spread</li> <li>• Timing and quantity of orders</li> <li>• Failings in pre-and post-trade controls</li> <li>• £125k fine after settlement, 1/3 discount</li> </ul>

<b>Total penalties 2019</b>	<ul style="list-style-type: none"> <li>• £215,000.33</li> </ul>
Total volume 31/12/19	<ul style="list-style-type: none"> <li>• 1,105,057,000 contracts</li> </ul>
Post-tax profit 31/12/19	<ul style="list-style-type: none"> <li>• \$100,575,000</li> </ul>
2019 themes	<ul style="list-style-type: none"> <li>• EFP breach (x1), EFS breach (x1), grading/warehouse failure (x2), disorderly trading (x1)</li> </ul>

Ref	Year	Summary
<a href="#">20008</a>	2020	<ul style="list-style-type: none"> <li>• EFP conducted by contract in Brent Crude Futures</li> <li>• Customer unable to produce evidence of underlying transactions</li> <li>• Explained solely to transfer money from itself to counterparty</li> <li>• Member had taken reasonable steps to prevent</li> <li>• Abuse by customer of facilities provided by member</li> <li>• Member only became aware of this after the fact</li> <li>• Customer's trader suspended from exchange access through any exchange member firm for 13 days, reduced from 20 to reflect cooperation</li> </ul>
<a href="#">20026</a>	2020	<ul style="list-style-type: none"> <li>• Mishandling of certified warrants</li> <li>• Failed to update Guardian properly, accuracy and completeness</li> <li>• £12.5k settlement, after a discount for cooperation and early settlement</li> </ul>
<a href="#">20025</a>	2020	<ul style="list-style-type: none"> <li>• Failure to update Guardian</li> <li>• Remedial action</li> <li>• £72,917 settlement after a discount for cooperation and early settlement</li> </ul>

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Ref	Year	Summary
<a href="#">20024</a>	2020	<ul style="list-style-type: none"> <li>Breaches of grading and warehouse procedures</li> <li>Failure to update Guardian</li> <li>Remedial action</li> <li>£72,917 settlement after a discount for cooperation and early settlement</li> </ul>
<a href="#">20023</a>	2020	<ul style="list-style-type: none"> <li>Breaches of grading and warehouse procedures</li> <li>Failure to update Guardian</li> <li>£200k settlement after discounts</li> </ul>
<a href="#">20022</a>	2020	<ul style="list-style-type: none"> <li>Breaches of grading and warehouse procedures</li> <li>Mishandling of warrants</li> <li>£145k settlement after discounts</li> </ul>
<a href="#">20054</a>	2020	<ul style="list-style-type: none"> <li>Record keeping breaches: block trades</li> <li>Remedial action taken</li> <li>£83,333.33 settlement after discount</li> </ul>
<a href="#">20079</a>	2020	<ul style="list-style-type: none"> <li>Record keeping breaches: block trades</li> <li>£125k penalty but member unable to pay so resigned membership</li> </ul>
<a href="#">20094</a>	2020	<ul style="list-style-type: none"> <li>Failure to source valid warrants to fulfil delivery obligation in London Cocoa, knock on delays to delivery process and reports</li> <li>Closure of client positions to prevent delivery. Client's accounts were maintained on gross basis. Accordingly, open interest published significantly lower than anticipated</li> <li>£43,333.33 settlement after discount</li> </ul>
<a href="#">20104</a>	2020	<ul style="list-style-type: none"> <li>Failure to meet record keeping, recorded media and timestamp requirements around block trading</li> <li>£83,333 settlement after discount</li> </ul>

<b>Total penalties 2020</b>	<ul style="list-style-type: none"> <li>£838,333.66</li> </ul>
Total volumes 31/12/20	<ul style="list-style-type: none"> <li>1,110,075,000 contracts</li> </ul>
Post-tax profit 31/12/20	<ul style="list-style-type: none"> <li>\$101,623,000</li> </ul>
2020 issues	<ul style="list-style-type: none"> <li>EFP breach (x1), grading/warehouse failure (x5), block trade breaches (x3), failure to deliver (x1)</li> </ul>

Ref	Year	Summary
<a href="#">21005</a>	2021	<ul style="list-style-type: none"> <li>Incorrect method for matching orders as cross trades in FTSE 100 index option contract sixteen times in circa 5 months</li> <li>£40,000 settlement after discount</li> </ul>
<a href="#">21023</a>	2021	<ul style="list-style-type: none"> <li>Significant excess position close outs in Brent Crude and Dubai 1<sup>st</sup> Line</li> </ul>



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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Final open interest figures significantly lower than expected</li> <li>• Requests to approve close outs of excess adjustments that had the same effect</li> <li>• £36,666.67 settlement after discount</li> </ul>
<a href="#">21022</a>	2021	<ul style="list-style-type: none"> <li>• Member had long position above expiry limit</li> <li>• £30k fine</li> </ul>
<a href="#">21027</a>	2021	<ul style="list-style-type: none"> <li>• Failure to meet record keeping, recorded media and timestamp requirements around block trading</li> <li>• Remedial action taken</li> <li>• £75k settlement after discount</li> </ul>
<a href="#">21036</a>	2021	<ul style="list-style-type: none"> <li>• Failure to meet record keeping requirements around block trading</li> <li>• Disclosure of identities of parties to block trades to opposing counterparty without express consent</li> <li>• Remedial action taken</li> <li>• £85k settlement after discount</li> </ul>
<a href="#">21058</a>	2021	<ul style="list-style-type: none"> <li>• Member held short position in WTI crude above the position limit</li> <li>• £22,350 fine</li> </ul>
<a href="#">21059</a>	2021	<ul style="list-style-type: none"> <li>• Failed to accurately report open positions for numerous contracts at close of business on one day</li> <li>• £25k fine</li> </ul>
<a href="#">21064</a>	2021	<ul style="list-style-type: none"> <li>• Member failed to identify pattern of disorderly trading engaged in by DEA client – Brent Crude, WTI futures and spread markets</li> <li>• Remedial action taken</li> <li>• £30k settlement after discount</li> </ul>
<a href="#">21085</a>	2021	<ul style="list-style-type: none"> <li>• Self-employed proprietary trader suspected of prearranging trades whilst on Liquidity Provider Programme</li> <li>• Inflated trading volumes in contracts, greater financial benefits from programme</li> <li>• Respondent did not agree but agreed not to contest</li> <li>• £100k settlement</li> <li>• <b>2-year suspension through any member firm</b></li> </ul>
<a href="#">21089</a>	2021	<ul style="list-style-type: none"> <li>• Held position above WTI crude futures limit at close of business</li> <li>• £17.5k fine</li> </ul>
<a href="#">21092</a>	2021	<ul style="list-style-type: none"> <li>• Held position above Brent crude futures limit at close of business</li> <li>• £44,500 fine</li> </ul>
<a href="#">21091</a>	2021	<ul style="list-style-type: none"> <li>• Late submissions of block trades</li> <li>• £20k fine</li> </ul>
<a href="#">21090</a>	2021	<ul style="list-style-type: none"> <li>• Late submissions of block trades for sustained period</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• £200k settlement</li> </ul>
<a href="#">21095</a>	2021	<ul style="list-style-type: none"> <li>• Disclosure of identities of parties to block trades to opposing counterparty without express consent</li> <li>• £10k after settlement</li> </ul>
<a href="#">21094</a>	2021	<ul style="list-style-type: none"> <li>• Multiple breaches of block reporting time limits</li> <li>• £15k fine</li> </ul>
<a href="#">21093</a>	2021	<ul style="list-style-type: none"> <li>• Late submissions of block trades</li> <li>• £10k fine</li> </ul>
<a href="#">21101</a>	2021	<ul style="list-style-type: none"> <li>• Failure to report a block trade within 15 minutes</li> <li>• Disclosed details of transaction to market participants that were not party to the transaction</li> <li>• £11k fine</li> </ul>
<a href="#">21102</a>	2021	<ul style="list-style-type: none"> <li>• Failure to provide branch information to venue to enable it to fulfil UK MiFIR reporting obligations</li> <li>• £25k fine</li> </ul>
<a href="#">21116</a>	2021	<ul style="list-style-type: none"> <li>• Self-employed proprietary trader suspected of prearranging trades whilst on Liquidity Provider Programme</li> <li>• Inflated trading volumes in contracts, greater financial benefits from programme</li> <li>• Respondent did not agree but agreed not to contest</li> <li>• £100k settlement, reduced to zero because of evidence of serious financial hardship</li> <li>• <b>2-year suspension through any member firm</b></li> </ul>
<a href="#">21118</a>	2021	<ul style="list-style-type: none"> <li>• Failures of multiple firms to comply with investment firm attestation measures</li> <li>• Each firm fined £5k = £95k</li> </ul>
<a href="#">21173</a>	2021	<ul style="list-style-type: none"> <li>• Failure to submit annual return in a timely manner</li> <li>• Each firm fined £5k = £25k</li> </ul>
<a href="#">21174</a>	2021	<ul style="list-style-type: none"> <li>• DEA client placed large orders on one side of orderbook which appeared to be intended to attract trades against iceberg orders on opposite side of order book. Quickly after smaller orders traded, trader deleted large orders</li> <li>• Member provided evidence of surveillance arrangements that would detect in future</li> <li>• Member agreed to suspend client from accessing IFEU markets for 15 business days</li> </ul>
21178	2021	<ul style="list-style-type: none"> <li>• Entry of large aggressive orders at price where trader had opposing resting orders</li> <li>• Resting orders simultaneously deleted (self-trade prevention used in an abusive manner)</li> <li>• Member undertaking development work to improve surveillance</li> <li>• Member agreed without admitting or denying</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>£49k settlement after discount</li> <li><b>25 business day suspension from ICE EU markets for relevant trader</b></li> </ul>
<a href="#">21195</a>	2021	<ul style="list-style-type: none"> <li>Failure to provide branch information to venue to enable it to fulfil UK MiFIR reporting obligations</li> <li>£25k fine</li> </ul>
<a href="#">21218</a>	2021	<ul style="list-style-type: none"> <li>Member entered, on behalf of a client, large stop-limit orders with reckless disregard for impact the might have on the market</li> <li>Failings in member's pre-and post-trade controls had also occurred</li> <li>Remedial action taken</li> <li>Neither member nor client benefitted</li> <li>£56k settlement after discount</li> </ul>
<a href="#">21217</a>	2021	<ul style="list-style-type: none"> <li>Suspected disruptive and disorderly trading by a DEA client</li> <li>Heating oil futures</li> <li>Several significant, sharp, price movements in a five hour period</li> <li>Orders submitted that were considerably larger than average order size</li> <li>Failings in member's pre-and post-trade controls had also occurred</li> <li>Remedial action taken</li> <li>£35k settlement after discount</li> </ul>

<b>Total penalties 2021</b>	<ul style="list-style-type: none"> <li>£1,172,016.67</li> </ul>
Total volumes 31/12/21	<ul style="list-style-type: none"> <li>1,147,573,000 contracts</li> </ul>
Post-tax profit 31/12/21	<ul style="list-style-type: none"> <li>\$106,043,000</li> </ul>
2021 issues	<ul style="list-style-type: none"> <li>Cross trade matching failure (x1), excess position close out (x1), position limit breach (x4), block trade breaches (x8), position reporting breach (x1) disorderly trading (x3), pre-arranged trading (x2), layering and spoofing typed behaviours (x2), MiFIR reporting breach (x2), attestation or return breaches (x2)</li> </ul>

Ref	Year	Summary
<a href="#">22024</a>	2022	<ul style="list-style-type: none"> <li>Failures of multiple firms to comply with investment firm attestation measures</li> <li>Each firm fined £5k = £15k</li> </ul>

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Ref	Year	Summary
<a href="#">22065</a>	2022	<ul style="list-style-type: none"> <li>• Held position above Dubai 1<sup>st</sup> line limit at close of business</li> <li>• £31k</li> </ul>
<a href="#">22067</a>	2022	<ul style="list-style-type: none"> <li>• Several significant, sharp, price movements in Brent Crude futures</li> <li>• Erroneous order entry by trader claimed</li> <li>• Entry of limit orders of considerable volume that had to be continuously price-adjusted</li> <li>• Failings in member's pre-and post-trade controls had also occurred</li> <li>• Proactive notification and prompt remediation</li> <li>• £21k settlement after discount</li> </ul>
<a href="#">22075</a>	2022	<ul style="list-style-type: none"> <li>• Failure to submit annual return in a timely manner</li> <li>• Each firm fined £5k = £15k</li> </ul>
<a href="#">22078</a>	2022	<ul style="list-style-type: none"> <li>• Position transfer resulted in offsetting of positions in White Sugar Futures contract</li> <li>• Caused 20% reduction in open interest</li> <li>• £40k fine</li> </ul>
<a href="#">22082</a>	2022	<ul style="list-style-type: none"> <li>• Disorderly trading by firm's traders in gilt and Euribor futures</li> <li>• Entry of large aggressive orders at price where had opposing resting orders</li> <li>• Cancelled almost immediately after resting orders had been deleted</li> <li>• Caused price fluctuations</li> <li>• Unilateral paused activities for several months whilst investigating, provided evidence of internal controls but were not sufficient</li> <li>• Compliance did not appropriately challenge</li> <li>• £112k settlement after discount</li> </ul>
<a href="#">22105</a>	2022	<ul style="list-style-type: none"> <li>• Exchange discovered that member was not in possession of all required private order feed connections from exchange</li> <li>• Surveillance systems not capturing orders and trades for a limited number of clients over extended period</li> <li>• Member self-disclosed order feed issue</li> <li>• Small proportion of client base</li> <li>• Remedial action taken</li> <li>• £63k settlement after discount</li> </ul>
<a href="#">22107</a>	2022	<ul style="list-style-type: none"> <li>• Broker arranged block in EUA options several minutes after market had closed</li> <li>• Remedial action taken – training</li> <li>• £2,450 settlement after discount</li> </ul>
<a href="#">22168</a>	2022	<ul style="list-style-type: none"> <li>• London Cocoa warrant not maintained in good order</li> <li>• Remedial action taken</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>£6.3k settlement after discount</li> </ul>
<a href="#">22175</a>	2022	<ul style="list-style-type: none"> <li>Warehouse company had not updated Guardian for 145 days after two warrants for London Cocoa had been delivered</li> <li>Remedial action taken</li> <li>£5,950 settlement after discount</li> </ul>

<b>Total penalties 2022</b>	<ul style="list-style-type: none"> <li>£311,700</li> </ul>
<b>Post-tax profit 31/12/22</b>	<ul style="list-style-type: none"> <li>\$186,992,000</li> </ul>
<b>Total penalties 2022 issues</b>	<ul style="list-style-type: none"> <li>£3,317,536.37</li> </ul>
	<ul style="list-style-type: none"> <li>Grading/warehouse failure (x2), attestation or return breaches (x2), position limit breach (x1), block trade breaches (x1), position transfer breaches (x1), order feed issue (x1), disorderly trading (x2)</li> </ul>

**ICE Futures Europe - REC 2.15.3**

Factors	Occasions
Take appropriate disciplinary action against members in breach of its rules (and settlement arrangements, where appropriate):	85(2)
Suspend (a member's) access to its facilities:	4 but 2 client suspensions agreed with member
Refer members' or others' conduct to other appropriate authorities for possible action or further investigation:	See below
Where appropriate, enforce its rules (and settlement arrangements, where appropriate) against users (other than members) of its facilities:	4
Act against suppliers of services to members (for example, warehouses) whose performance or conduct may be critical to ensuring compliance with its rules (and settlement arrangements, where appropriate):	13

Issue type	Count
Warehousing or grading issues	14
Non-compliance with block trading rules	12
Non-compliance with rules governing EFS or EFP	5
Non-compliance with rules governing annual returns or attestations	4

Appendix E

Inadequate trade surveillance systems and controls	0
Position limit related breach	8
Reckless or disorderly trading	9
Position transfer breach	1
Failure to supply information for MiFIR reporting	2
Layering and spoofing type behaviour	2
Prearranged trading	2
Timely close out failure	18
Failure to take delivery or deliver	7
Large trader reporting or position reporting failure / breach	3
Failure to setup registry trust account	2
Retrospective submission of orders	1
Failure to use taped line	1
Front running	1
Failure to settle options by deadline	8
Cross trade matching failure	1
Order feed issue	1

## Appendix F: Summary of ICE US disciplinary notices

Note: these are summaries and excerpts from actual enforcement notices, tabulated for analysis.

Total volumes 31/12/07	<ul style="list-style-type: none"> <li>53,616,158</li> </ul>
Post-tax profit 31/12/07	<ul style="list-style-type: none"> <li>ADR US\$426k (exchange and clearing fees and inc. Canada)</li> </ul>
Total volumes 31/12/08	<ul style="list-style-type: none"> <li>80,954,837</li> </ul>
Post-tax profit 31/12/08	<ul style="list-style-type: none"> <li>ADR US\$613k (exchange and clearing fees and inc. Canada)</li> </ul>
Total volumes 31/12/09	<ul style="list-style-type: none"> <li>93,025,024</li> </ul>
Post-tax profit 31/12/09	<ul style="list-style-type: none"> <li>Not published separately</li> </ul>
Total volumes 31/12/10	<ul style="list-style-type: none"> <li>107,297,161</li> </ul>
Post-tax profit 31/12/10	<ul style="list-style-type: none"> <li>Not published separately</li> </ul>
Total volumes 31/12/11	<ul style="list-style-type: none"> <li>107,287,467</li> </ul>
Post-tax profit 31/12/11	<ul style="list-style-type: none"> <li>Not published separately</li> </ul>
Total volumes 31/12/12	<ul style="list-style-type: none"> <li>182,680,647</li> </ul>
Post-tax profit 31/12/12	<ul style="list-style-type: none"> <li>Not published separately</li> </ul>
Total volumes 31/12/13	<ul style="list-style-type: none"> <li>423,639,713</li> </ul>
Post-tax profit 31/12/13	<ul style="list-style-type: none"> <li>Not published separately</li> </ul>

Ref	Year	Summary
<a href="#">2012-089</a>	2014*	<ul style="list-style-type: none"> <li>Floor broker may have breached order ticket record keeping requirements by pre-time stamping ticket</li> <li>M</li> <li>Settlement</li> <li>\$5k penalty</li> </ul>
<a href="#">2012-168</a>	2014*	<ul style="list-style-type: none"> <li>Two breaches of Henry Hub spot limit in 2012</li> <li>Violations self-reported</li> <li>NM</li> <li>Settlement</li> <li>\$60k penalty</li> </ul>

Appendix F

Ref	Year	Summary
<a href="#">2012-042</a>	2014*	<ul style="list-style-type: none"> <li>• Firm failed to use crossing order to execute trade resulting from pre-execution communication</li> <li>• M</li> <li>• Settlement</li> <li>• \$10k penalty</li> </ul>
<a href="#">2012-049</a>	2014*	<ul style="list-style-type: none"> <li>• Firm failed to observe pre-execution / crossing order rules</li> <li>• NM</li> <li>• Settlement</li> <li>• \$5k penalty</li> </ul>
<a href="#">2012-053</a>	2014*	<ul style="list-style-type: none"> <li>• Firm failed to expose Index Mini Futures order to market for a minimum of 5 seconds prior to crossing</li> <li>• M</li> <li>• Settlement</li> <li>• \$10k penalty</li> </ul>
<a href="#">2010-076</a>	2014*	<ul style="list-style-type: none"> <li>• Firm failed to include unique identifiers on orders submitted to exchange's electronic trading system</li> <li>• M</li> <li>• Settlement</li> <li>• \$10k penalty</li> </ul>
<a href="#">2011-041 and 2012-084</a>	2014*	<ul style="list-style-type: none"> <li>• Respondents alleged to have violated block trade rules in coffee options and sugar futures, particularly around failure to report and taking advantage of information conveyed in pre-execution communications</li> <li>• 2 x M, 1 x MR</li> <li>• Settlement</li> <li>• Firm 1: \$450k penalty</li> <li>• Firm 2: \$25k penalty</li> <li>• Individual: \$15k penalty</li> </ul>
<a href="#">2013-007</a>	2014*	<ul style="list-style-type: none"> <li>• Failure to comply with cash and carry exemption by failing to liquid positions in contract month</li> <li>• NM</li> <li>• Settlement</li> <li>• \$75k penalty</li> </ul>
<a href="#">2012-080</a>	2014*	<ul style="list-style-type: none"> <li>• Member reported inaccurate open interest data on two occasions in two different contracts</li> <li>• M</li> <li>• Settlement</li> <li>• \$15k</li> </ul>



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Ref	Year	Summary
<a href="#">2012-087</a>	2014*	<ul style="list-style-type: none"> <li>• Misreporting of open interest data in coffee on one day</li> <li>• M</li> <li>• Settlement</li> <li>• \$20k</li> </ul>
<a href="#">2011-031</a>	2014*	<ul style="list-style-type: none"> <li>• Individual entered orders on electronic trading system at prices outside daily price limit in Cotton no.2</li> <li>• Not in good faith / bona fide</li> <li>• NM</li> <li>• Settlement</li> <li>• Bar from membership – 6 months</li> <li>• Denial of trading access – 6 months</li> </ul>
<a href="#">2012-049</a>	2014*	<ul style="list-style-type: none"> <li>• Firm submitted an RFQ when it should have used a CO</li> <li>• M</li> <li>• Settlement</li> <li>• \$5k</li> </ul>
<a href="#">2012-068</a>	2014*	<ul style="list-style-type: none"> <li>• Firm and employee submitted multiple RFQs when they should have used CO</li> <li>• M</li> <li>• Settlement</li> <li>• \$15k</li> </ul>
<a href="#">2012-092</a>	2014*	<ul style="list-style-type: none"> <li>• Firm and employees failed to use CO when executing a block trade from pre-execution communications</li> <li>• M, 2 x MR</li> <li>• Settlement</li> <li>• \$10k</li> </ul>
<a href="#">2013-138</a>	2014*	<ul style="list-style-type: none"> <li>• Firm and employee failed to use CO when executing a crossing order in a futures contract</li> <li>• NM</li> <li>• Settlement</li> <li>• \$10k</li> </ul>
<a href="#">2012-00161</a>	2014*	<ul style="list-style-type: none"> <li>• Entity exceeded position limit in Transco Zone Swing Future</li> <li>• M</li> <li>• Settlement</li> <li>• \$20k</li> </ul>
<a href="#">2013-021</a>	2014*	<ul style="list-style-type: none"> <li>• Firm reported inaccurate open interest data in Cocoa futures</li> <li>• Caused overstatement of open interest for one day before first notice day</li> <li>• M</li> <li>• Settlement</li> <li>• \$15k</li> </ul>

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Ref	Year	Summary
<a href="#">2012-076</a>	2014*	<ul style="list-style-type: none"> <li>• Individual engaged in inequitable trading by splitting 106 EFP trades between his employer and a personal, unrelated company</li> <li>• NM</li> <li>• Settlement</li> <li>• \$514,017.78 disgorgement of profits</li> <li>• Denial of access to any ICE market for 2 years</li> </ul>
<a href="#">2013-133</a>	2014*	<ul style="list-style-type: none"> <li>• Individual submitted RFQ whilst CO to which he was a party was in the electronic trading system</li> <li>• NM</li> <li>• Settlement</li> <li>• \$5k</li> </ul>
<a href="#">2012-076</a>	2014*	<ul style="list-style-type: none"> <li>• Firm failed to exercise due diligence:               <ul style="list-style-type: none"> <li>○ Opening accounts referred by IBs</li> <li>○ Over trading by those customers referred</li> </ul> </li> <li>• M</li> <li>• Settlement</li> <li>• \$100k</li> </ul>
<a href="#">2013-019</a>	2014*	<ul style="list-style-type: none"> <li>• Floor broker time stamped blank order tickets on multiple instances</li> <li>• M</li> <li>• Settlement</li> <li>• \$20k</li> </ul>
<a href="#">2011-048</a>	2014*	<ul style="list-style-type: none"> <li>• Member failed to anticipate that ATS might malfunction</li> <li>• Malfunctioned twice in Russell 2000 Index Mini futures</li> <li>• Thousands of proprietary orders submitted in one instance</li> <li>• Several unintended matches</li> <li>• M</li> <li>• Settlement</li> <li>• \$25k</li> </ul>
<a href="#">2012-055</a>	2014*	<ul style="list-style-type: none"> <li>• One instance of potential front running for personal account ahead of client order</li> <li>• Two instances of failing to timestamp order tickets</li> <li>• M</li> <li>• Settlement</li> <li>• \$10k penalty</li> <li>• \$660 restitution</li> <li>• Denial of access 6 months</li> </ul>
<a href="#">2012-163</a>	2014*	<ul style="list-style-type: none"> <li>• Exceeding energy position limits on two occasions</li> <li>• M</li> <li>• Settlement</li> <li>• \$40k</li> </ul>

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Ref	Year	Summary
<a href="#">2013-00196</a>	2014*	<ul style="list-style-type: none"> <li>Exceeded energy position limit on one occasion</li> <li>Settlement</li> <li>\$188,960.44 penalty</li> <li>Includes \$148,960.44 disgorgement</li> </ul>
<a href="#">2014-035</a>	2014*	<ul style="list-style-type: none"> <li>Failure to comply with terms of position exemption re: coffee futures</li> <li>NM</li> <li>Settlement</li> <li>\$5k</li> </ul>
<a href="#">2012-061</a>	2014*	<ul style="list-style-type: none"> <li>Respondents executed two pre-arranged trades by using EFPs which were not bona fide – cash/physical offset</li> <li>M</li> <li>Settlement</li> <li>\$75k</li> </ul>
<a href="#">2014-048</a>	2014*	<ul style="list-style-type: none"> <li>Briefly held intraday spot energy position more than position limit</li> <li>NM</li> <li>Settlement</li> <li>\$7.5k</li> </ul>
<a href="#">2013-0024</a>	2014*	<ul style="list-style-type: none"> <li>Breach of block trading rules re: energy contracts</li> <li>Reporting outside 15-minute window</li> <li>Submitting trades below minimum size</li> <li>M</li> <li>Settlement</li> <li>\$26,250</li> </ul>
<a href="#">2014-046</a>	2014*	<ul style="list-style-type: none"> <li>Breach of ERFp rules</li> <li>Failed to maintain documents relevant to related OTC position</li> <li>M</li> <li>Settlement</li> <li>\$7.5k</li> </ul>
<a href="#">2013-00194</a>	2014*	<ul style="list-style-type: none"> <li>5 instances of spot month position limit breaches</li> <li>M</li> <li>Settlement</li> <li>\$89,972.50 penalty</li> <li>\$9,972.50 disgorgement</li> </ul>
<a href="#">2014-042</a>	2014*	<ul style="list-style-type: none"> <li>Breach of ERFp rules</li> <li>Failed to maintain documents relevant to related OTC position</li> <li>M</li> <li>Settlement</li> <li>\$7.5k</li> </ul>
<a href="#">2014-017</a>	2014*	<ul style="list-style-type: none"> <li>Exceeded energy position limit on one occasion</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• M</li> <li>• Settlement</li> <li>• \$20k penalty</li> <li>• \$174,580 disgorgement</li> </ul>
<a href="#">2014-043</a>	2014*	<ul style="list-style-type: none"> <li>• Breach of ERFP rules</li> <li>• Failed to maintain documents relevant to related OTC position</li> <li>• M</li> <li>• Settlement</li> <li>• \$7.5k</li> </ul>
<a href="#">2013-018</a>	2014*	<ul style="list-style-type: none"> <li>• Trader made series of transactions between his employer's and personal account – FCOJ futures</li> <li>• Settlement</li> <li>• NM</li> <li>• <b>Permanent ban</b></li> <li>• Restitution \$47,865</li> </ul>
<a href="#">2014-044</a>	2014*	<ul style="list-style-type: none"> <li>• Breach of ERFP rules</li> <li>• Failed to maintain documents relevant to related OTC position on three occasions</li> <li>• M</li> <li>• Settlement</li> <li>• \$10k penalty</li> </ul>
<a href="#">2013-037</a>	2014*	<ul style="list-style-type: none"> <li>• Entity failed to supervise exchange related activities of two ATS strategies it operated</li> <li>• Error – strategies transacted against each other</li> <li>• Failure to put in place appropriate safeguards</li> <li>• NM</li> <li>• Settlement</li> <li>• \$20k</li> </ul>
<a href="#">2013-00155</a>	2014*	<ul style="list-style-type: none"> <li>• Exceeded energy position limit on one occasion</li> <li>• M</li> <li>• Settlement</li> <li>• \$82,064 penalty</li> <li>• Included \$62,064 disgorgement</li> </ul>

<b>Total penalties 2014</b>	<ul style="list-style-type: none"> <li>• 1,291,250</li> </ul>
Total volumes 31/12/14	<ul style="list-style-type: none"> <li>• 358,123,407</li> </ul>
Post-tax profit 31/12/14	<ul style="list-style-type: none"> <li>• Not published separately</li> </ul>
2014 themes	<ul style="list-style-type: none"> <li>• Record keeping breach (x2), position limit breach (x9), failure to use correct order type, observe crossing rules or enter outside price limit (x8), failure to expose for 5 seconds (x1), failure to use unique IDs (x1), block</li> </ul>

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	trade violations (x2), failure to comply with exemption terms (x1), inaccurate or missed reporting, e.g. open interest (x3), improper personal account dealing and/or front running (x3), failure to exercise due diligence (x1), ATS malfunction, improper oversight (x2), EFP breaches (x5)
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Ref	Year	Summary
2013-00139	2015*	<ul style="list-style-type: none"> <li>• Fund manager opened position in spot month CME/NYMEX NatGas futures whilst holding in excess in Henry Hub futures during expiry</li> <li>• NM</li> <li>• Settlement</li> <li>• \$20k</li> </ul>
<a href="#">2012-0171</a>	2015*	<ul style="list-style-type: none"> <li>• Third party broker organised a series of block trades between two unrelated parties to compensate it for a loss sustained in an unrelated customer error</li> <li>• 1xM, 2xNM</li> <li>• Settlement</li> <li>• Broker: \$15k penalty</li> <li>• Party 2: \$7.5k penalty</li> <li>• Party 3: \$7.5k penalty</li> </ul>
<a href="#">2014-110</a>	2015*	<ul style="list-style-type: none"> <li>• Entity exceeded exchange position limit on Cotton Futures</li> <li>• NM</li> <li>• Settlement</li> <li>• \$15k penalty</li> <li>• \$255,110 disgorgement</li> </ul>
<a href="#">2014-034</a>	2015*	<ul style="list-style-type: none"> <li>• Reporting inaccurate open interest data in energy contracts</li> <li>• M</li> <li>• Settlement</li> <li>• \$10k penalty</li> </ul>
<a href="#">2011-034</a>	2015*	<ul style="list-style-type: none"> <li>• Broker allocated trades intended for customer to personal account</li> <li>• Breached exchange order timestamping and record keeping requirements twice</li> <li>• Failed to record trades executed on trading cards three times</li> <li>• M</li> <li>• Settlement</li> <li>• \$10k penalty</li> <li>• \$1.5k restitution</li> </ul>
<a href="#">2012-045</a>	2015*	<ul style="list-style-type: none"> <li>• Principal of trading entity and the entity failed to supervise employee clerk</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Employee clerk allocated trades to principal's personal account rather than to fill customer's order</li> <li>• NM</li> <li>• Disciplinary action</li> <li>• Principal and entity – penalty of \$7.5k</li> <li>• \$855 restitution to customer</li> </ul>
<a href="#">2011-054</a>	2015*	<ul style="list-style-type: none"> <li>• Several breaches of EFRP requirements</li> <li>• Member failed to retain confirmations to prove physical deal on several occasions in a three month period</li> <li>• Settlement</li> <li>• \$650k penalty</li> </ul>
<a href="#">2013-159</a>	2015*	<ul style="list-style-type: none"> <li>• Entity's ATS malfunctioned</li> <li>• Undetected software bug</li> <li>• Caused numerous messages to be sent to exchange in error</li> <li>• Failed to identify prior to deployment in market</li> <li>• Henry Hub</li> <li>• Settlement</li> <li>• \$25k penalty</li> </ul>
<a href="#">2014-0081</a>	2015*	<ul style="list-style-type: none"> <li>• Entity misreported block trade times on several occasions</li> <li>• Natural Gas</li> <li>• \$40k penalty</li> </ul>
<a href="#">2011-054</a>	2015*	<ul style="list-style-type: none"> <li>• Individual did not maintain confirmation statements to support EFP transactions</li> <li>• Settlement</li> <li>• \$10k penalty</li> </ul>
<a href="#">2014-143</a>	2015*	<ul style="list-style-type: none"> <li>• Firm misreported open interest in cocoa futures</li> <li>• Settlement</li> <li>• \$20k penalty</li> </ul>
<a href="#">2014-067</a>	2015*	<ul style="list-style-type: none"> <li>• Entity held intra-day position in Henry Hub more than limit on one occasion</li> <li>• Settlement</li> <li>• \$7.5k penalty</li> <li>• \$154,180 disgorgement</li> </ul>
<a href="#">2013-00206</a>	2015*	<ul style="list-style-type: none"> <li>• Entity breached block trade rules on several occasions</li> <li>• Below minimum threshold requirement</li> <li>• Reported blocks outside 15-minute reporting window</li> <li>• Energy futures and options</li> <li>• Multiple recordkeeping failures</li> <li>• Failing to supervise activities by firm's employees</li> <li>• Settlement</li> <li>• \$200k penalty</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Voluntary addition of compliance staff and systems and controls</li> </ul>
<a href="#">2014-018</a>	2015*	<ul style="list-style-type: none"> <li>• Two affiliated entities found to have executed wash trades</li> <li>• Four instances</li> <li>• Settlement</li> <li>• \$7.5k penalty</li> </ul>
<a href="#">2012-038</a>	2015*	<ul style="list-style-type: none"> <li>• Entity failed to comply with pre-execution communication procedures</li> <li>• Multiple instances</li> <li>• One instance failed to expose cross order to market for five seconds</li> <li>• Settlement</li> <li>• \$300k</li> </ul>
<a href="#">2013-009</a>	2015*	<ul style="list-style-type: none"> <li>• Layering and spoofing</li> <li>• 3-month period</li> <li>• Russell 2000 Mini Futures</li> <li>• Disruptive</li> <li>• Settlement</li> <li>• \$125k penalty</li> </ul>
<a href="#">2014-0130</a>	2015*	<ul style="list-style-type: none"> <li>• Firm misreported execution times of several block trades</li> <li>• Reporting a block trade outside 15-minute window</li> <li>• Settlement</li> <li>• \$22.5k</li> </ul>
<a href="#">2012-155</a>	2015*	<ul style="list-style-type: none"> <li>• Firm failed to comply with arbitrage exemption on four occasions</li> <li>• Three occasions held position more than spot month limit</li> <li>• Failed to supervise activity of an employee</li> <li>• \$247,617.50 penalty</li> <li>• Included \$167,617.50 disgorgement</li> </ul>
<a href="#">2014-105</a>	2015*	<ul style="list-style-type: none"> <li>• Firm reported open interest on a gross basis, resulting in overstatement</li> <li>• Henry Hub</li> <li>• Settlement</li> <li>• \$10k penalty</li> </ul>
<a href="#">2014-025</a>	2015*	<ul style="list-style-type: none"> <li>• Firm and broker violated trade practices</li> <li>• Broker communicated with an unaffiliated trader regarding terms of a customer order with a view to trading on information</li> <li>• Failed to timestamp order upon receipt</li> <li>• \$200k penalty – entity</li> <li>• <b>3 month ban for broker</b></li> </ul>
<a href="#">2013-135</a>	2015*	<ul style="list-style-type: none"> <li>• Affiliates entered several EFPs that were not bona fide</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Failed to maintain documentation to support EFPs</li> <li>• Settlement</li> <li>• Each entity agreed to pay \$62,500 penalty</li> </ul>
<a href="#">2014-057</a>	2015*	<ul style="list-style-type: none"> <li>• Firm reported block trades outside 5-minute reporting window on several occasions – Russell 1000 Growth Index Mini Futures</li> <li>• Reporting one block trade below minimum size requirement</li> <li>• Failing to properly timestamp tickets</li> <li>• Settlement</li> <li>• \$25k</li> </ul>
<a href="#">2013-00209 and 2014-068</a>	2015*	<ul style="list-style-type: none"> <li>• Entity held a position more than limits on two occasions</li> <li>• Settlement</li> <li>• \$34,247.50 penalty</li> <li>• \$6,747.50 disgorgement</li> </ul>
<a href="#">2014-028</a>	2015*	<ul style="list-style-type: none"> <li>• Inadvertently held intra-day positions more than spot month position limit</li> <li>• Henry Hub</li> <li>• \$28,127.50 penalty</li> <li>• \$13,127.50 disgorgement</li> </ul>
<a href="#">2013-042</a>	2015*	<ul style="list-style-type: none"> <li>• Employee of entity transacted accommodation trade (buy and sell)</li> <li>• Enabled counterparty to correct an erroneous allocation</li> <li>• Move a position from one prop account to another belonging to counterparty</li> <li>• Settlement</li> <li>• \$7.5k</li> </ul>
<a href="#">2014-057</a>	2015*	<ul style="list-style-type: none"> <li>• Reporting block trades outside 5-minute deadline – Russell 1000 Growth Index Mini Futures</li> <li>• One trade below minimum size requirement</li> <li>• Failing to properly timestamp tickets</li> <li>• Settlement</li> <li>• \$25k penalty</li> </ul>
<a href="#">2013-042</a>	2015*	<ul style="list-style-type: none"> <li>• Employee brokered block trade as accommodation trade to allow counterparty to correct transaction</li> <li>• Move from one proprietary account to another</li> <li>• Settlement</li> <li>• \$7.5k penalty</li> </ul>
<a href="#">2014-129</a>	2015*	<ul style="list-style-type: none"> <li>• One instance of failing to comply with recordkeeping requirements re: handling customer orders</li> <li>• Several instances of failing to report block trades within time limits / misreported execution time</li> </ul>



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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Failure to adequately supervise block traders' activities</li> <li>• \$27.5k penalty</li> </ul>
<a href="#">2014-111</a>	2015*	<ul style="list-style-type: none"> <li>• Held position more than spot limit</li> <li>• Energy contract</li> <li>• Self-reported</li> <li>• \$35k penalty</li> </ul>
<a href="#">2014-025</a>	2015*	<ul style="list-style-type: none"> <li>• Employee of firm entered order on basis of information received during pre-execution communication</li> <li>• Settlement</li> <li>• \$20k penalty</li> </ul>
<a href="#">2013-042</a>	2015*	<ul style="list-style-type: none"> <li>• Employee of entity transacted accommodation trade (buy and sell)</li> <li>• Enabled counterparty to correct an erroneous allocation</li> <li>• Move a position from one prop account to another belonging to counterparty</li> <li>• Transacting paired block trades at prices not fair and reasonable</li> <li>• Settlement</li> <li>• \$12.5k penalty</li> </ul>
<a href="#">2013-042</a>	2015*	<ul style="list-style-type: none"> <li>• Employee of entity transacted accommodation trade (buy and sell)</li> <li>• Enabled counterparty to correct an erroneous allocation</li> <li>• Move a position from one prop account to another belonging to counterparty</li> <li>• Transacting paired block trades at prices not fair and reasonable</li> <li>• Settlement</li> <li>• \$20k</li> </ul>
<a href="#">2014-082</a>	2015*	<ul style="list-style-type: none"> <li>• Failure to report open interest on several occasions in respect to different contracts</li> <li>• Settlement</li> <li>• \$100k penalty</li> </ul>
<a href="#">2014-156</a>	2015*	<ul style="list-style-type: none"> <li>• Reporting inaccurate open interest on last trading day in energy contracts on three separate occasions</li> <li>• Settlement</li> <li>• \$20k</li> </ul>
<a href="#">2013-042</a>	2015*	<ul style="list-style-type: none"> <li>• Employee of entity transacted accommodation trade (buy and sell)</li> <li>• Enabled counterparty to correct an erroneous allocation</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Move a position from one prop account to another belonging to counterparty</li> <li>• \$7.5k</li> </ul>
<a href="#">2013-130</a>	2015*	<ul style="list-style-type: none"> <li>• Entity exceeded position limit in Coffee</li> <li>• Settlement</li> <li>• \$50k penalty</li> </ul>
<a href="#">2014-126</a>	2015*	<ul style="list-style-type: none"> <li>• Failure to comply with recordkeeping requirements – handling customer orders</li> <li>• Failure to record oral communications on several occasions</li> <li>• Misreported correct execution time on several occasions</li> <li>• Failure to adequately supervise brokers’ block trade activity</li> <li>• Settlement</li> <li>• \$42.5k penalty</li> </ul>
<a href="#">2014-103</a>	2015*	<ul style="list-style-type: none"> <li>• Traders at entity executed wash trades with one another</li> <li>• Several occasions</li> <li>• Settlement</li> <li>• \$70k penalty</li> </ul>
<a href="#">2013-042</a>	2015*	<ul style="list-style-type: none"> <li>• Employee executed two wash trades to correct erroneous allocations</li> <li>• Moved from one proprietary account to another - belonged to employer at the time</li> <li>• Transacting at a price from earlier in trading day no longer fair or reasonable</li> <li>• Settlement</li> <li>• \$12.5k penalty</li> </ul>
<a href="#">2013-042</a>	2015*	<ul style="list-style-type: none"> <li>• Executed wash trade to correct erroneous allocation</li> <li>• Moved from one proprietary account to another - belonged to employer at the time</li> <li>• Settlement</li> <li>• \$5k penalty</li> </ul>
<a href="#">2014-088</a>	2015*	<ul style="list-style-type: none"> <li>• Employee confirmed that orders generated by firm’s ATS were for different beneficial owners</li> <li>• Offsetting orders were for the same funds</li> <li>• Wash trade</li> <li>• Settlement</li> <li>• \$15k penalty</li> </ul>
<a href="#">2015-011</a>	2015*	<ul style="list-style-type: none"> <li>• Inadvertently established position in spot month CME/NYMEX natural gas futures</li> <li>• Simultaneously held position more than spot month limit in Henry LD1</li> <li>• Settlement</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• \$7.5k penalty</li> </ul>
<a href="#">2014-157</a>	2015*	<ul style="list-style-type: none"> <li>• Multiple instances of incorrect reporting of open interest in energy contracts – last trading day of contract</li> <li>• Settlement</li> <li>• \$10k penalty</li> </ul>
<a href="#">2014-066</a>	2015*	<ul style="list-style-type: none"> <li>• Multiple instances of incorrect reporting of open interest in cocoa futures</li> <li>• Overstatement of open interest on several dates</li> <li>• Settlement</li> <li>• \$30k penalty</li> </ul>
<a href="#">2014-100A</a>	2015*	<ul style="list-style-type: none"> <li>• Failure to properly report several EFP transactions during a sustained period</li> <li>• Failure to supervise</li> <li>• Settlement</li> <li>• \$50k penalty</li> <li>• \$21,278 in underpaid fees</li> </ul>
<a href="#">2011-043</a>	2015*	<ul style="list-style-type: none"> <li>• Several former floor brokers engaged in non-competitive orders that were not correctly reported to exchange</li> <li>• Two former brokers failed to report broker association</li> <li>• One failed to report to a scheduled interview</li> <li>• Settlement</li> <li>• One denied access to ICE markets for 2 years, pay restitution of \$45,581.25</li> <li>• One denied access to ICE for 8 months</li> <li>• One denied access for one year</li> </ul>
<a href="#">2013-125</a>	2015*	<ul style="list-style-type: none"> <li>• Employees of firm traded funds they managed opposite each other to move positions from one fund to another without using crossing functionality</li> <li>• Multiple instances employees shared unique identifiers to use electronic trading system</li> <li>• Settlement</li> <li>• \$50k</li> </ul>

<b>Total penalties 2015</b>	<ul style="list-style-type: none"> <li>• 2,545,000</li> </ul>
Total volumes 31/12/15	<ul style="list-style-type: none"> <li>• 365,433,350</li> </ul>
Post-tax profit 31/12/15	<ul style="list-style-type: none"> <li>• Not published separately</li> </ul>
2015 themes	<ul style="list-style-type: none"> <li>• Record keeping breach (x8), position limit breach (x7), failure to use correct order type, observe crossing rules or enter price outside limit (x2), failure to expose for 5 seconds (x1), block trade violations (x7), failure</li> </ul>

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	<p>to comply with exemption terms (x1), inaccurate or failed reporting, e.g. open interest (x7), improper personal account dealing or front running (x4), ATS malfunction or improper oversight (x1), EFP breaches (x4), failure to supervise (x4), wash / accommodation trades (x11), layering and spoofing (x1), failure to appear (x1), sharing unique IDs (x1)</p>
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Ref	Year	Summary
<a href="#">2012-038</a>	2016*	<ul style="list-style-type: none"> <li>• Firm failed to report a large block trade in error within 5-minute reporting window</li> <li>• Firm had used EFP instead – Russell 2000 Index Mini Futures</li> <li>• Settlement</li> <li>• \$25k penalty</li> </ul>
<a href="#">2014-072</a>	2016*	<ul style="list-style-type: none"> <li>• Entity waited until final 20 minutes of trading on first notice day to reduce its position in Cotton Futures</li> <li>• Could have resulted in price movement in outright and spread markets</li> <li>• Held positions more than limit</li> <li>• Exchange staff had encouraged reduction of position in an orderly manner</li> <li>• Settlement</li> <li>• \$200k</li> </ul>
<a href="#">2015-039</a>	2016*	<ul style="list-style-type: none"> <li>• Entity held position more than Henry Hub limit</li> <li>• Settlement</li> <li>• \$20k penalty</li> <li>• \$812.50 disgorgement</li> </ul>
<a href="#">2015-045</a>	2016*	<ul style="list-style-type: none"> <li>• Individual breached exchange rules on multiple occasions</li> <li>• Layering and spoofing type activity misusing iceberg orders</li> <li>• Settlement</li> <li>• \$139,850 penalty including \$69,850 disgorgement</li> <li>• <b>Ten-day suspension – direct and indirect access on ICE US</b></li> </ul>
<a href="#">2015-013</a>	2016*	<ul style="list-style-type: none"> <li>• Broker failed to comply with recordkeeping requirements when handling customer orders</li> <li>• Multiple instances misreported block execution time</li> <li>• Submitted a block trade late</li> <li>• Failed to supervise brokers' block trade activity</li> <li>• One instance of disclosing identity of a customer without consent</li> <li>• Failing to produce books and records when requested</li> <li>• Settlement</li> </ul>

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		<ul style="list-style-type: none"> <li>• \$40k penalty</li> </ul>
<a href="#">2015-015</a>	2016*	<ul style="list-style-type: none"> <li>• Broker failed to comply with recordkeeping requirements when handling customer orders</li> <li>• Broker misreported block execution time</li> <li>• Failed to product oral communications stored by third party vendor</li> <li>• Settlement</li> <li>• \$10k penalty</li> </ul>
<a href="#">2015-025</a>	2016*	<ul style="list-style-type: none"> <li>• Individual breached exchange rules on multiple occasions</li> <li>• Layering and spoofing type activity involving use of small orders</li> <li>• Settlement</li> <li>• \$81,928.75 penalty</li> <li>• Additional \$8,081.95 disgorgement</li> <li>• <b>10-day suspension directly or indirectly any ICE US market</b></li> </ul>
<a href="#">2015-058</a>	2016*	<ul style="list-style-type: none"> <li>• Broker failed to report large trade positions on multiple occasions</li> <li>• Failed to have adequate processes or procedures in place to discover errors</li> <li>• Settlement</li> <li>• \$20k penalty</li> </ul>
<a href="#">2015-014</a>	2016*	<ul style="list-style-type: none"> <li>• Broker failed to comply with recordkeeping requirements when handling customer orders</li> <li>• Multiple instances misreported block execution time</li> <li>• Submitted a block trade late</li> <li>• Failing to produce books and records when requested</li> <li>• Failed to have adequate procedure in place to ensure correct reporting to exchange</li> <li>• Settlement</li> <li>• \$25k penalty</li> </ul>
<a href="#">2014-033 and 2015-085</a>	2016*	<ul style="list-style-type: none"> <li>• Individual trader at an entity engaged in layering and spoofing type activity using small orders</li> <li>• Abuse of pre-execution information to trade opposite counterparty to a futures trade</li> <li>• Firm failed to supervise</li> <li>• Settlement</li> <li>• \$80k penalty entity</li> <li>• <b>Entity and individual six month ban to any exchange market</b></li> </ul>
<a href="#">2015-051</a>	2016*	<ul style="list-style-type: none"> <li>• Broker failed to comply with recordkeeping requirements when handling customer orders</li> <li>• Multiple instances misreported block execution time</li> <li>• Submitted a block trade late</li> <li>• Firm failed to supervise</li> </ul>

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		<ul style="list-style-type: none"> <li>• Settlement</li> <li>• \$15k penalty</li> </ul>
<a href="#">2013-152</a>	2016*	<ul style="list-style-type: none"> <li>• Two individuals engaged in pre-arranged trading</li> <li>• Transferred \$2,005.00 between accounts</li> <li>• Effectively wash trades</li> <li>• Default finding</li> <li>• <b>Permanent ban</b></li> </ul>
<a href="#">2012-071</a>	2016*	<ul style="list-style-type: none"> <li>• Three individuals engaged in pre-arranged trading</li> <li>• Transferred \$20,842.50 between accounts</li> <li>• Effectively wash trades</li> <li>• Default finding</li> <li>• <b>Permanent ban</b></li> <li>• One individual fined \$100k</li> <li>• Other two fined \$25k each</li> </ul>
<a href="#">2014-128</a>	2016*	<ul style="list-style-type: none"> <li>• Broker failed to comply with recordkeeping requirements when handling customer orders</li> <li>• Multiple instances misreported block execution time</li> <li>• Submitted a block trade late</li> <li>• Failing to record and maintain oral communications that led to block trade</li> <li>• Failed to have adequate procedure in place to ensure correct reporting to exchange</li> <li>• Settlement</li> <li>• \$65k penalty</li> </ul>
<a href="#">2016-047</a>	2016*	<ul style="list-style-type: none"> <li>• Entity held a position more than conditional limit</li> <li>• Settlement</li> <li>• \$55,477.50 penalty</li> <li>• Included disgorgement \$18,477.50</li> </ul>
<a href="#">2016-052</a>	2016*	<ul style="list-style-type: none"> <li>• Entity exceeded position limit in coffee futures</li> <li>• Self-reported</li> <li>• Position brought within limits shortly after market open on following day</li> <li>• \$7.5k penalty</li> <li>• \$6,168.18 disgorgement</li> </ul>
<a href="#">2016-084</a>	2016*	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity through entering large / small orders on opposite sides of the market</li> <li>• Settlement</li> <li>• \$25k penalty</li> <li>• <b>15-day suspension direct or indirect access to ICE US</b></li> </ul>
<a href="#">2015-114</a> <a href="#">(1 of 4)</a>	2016*	<ul style="list-style-type: none"> <li>• Individual executed 52 fictitious transactions</li> <li>• Allowed a co-worker to use his personal exchange ID for the electronic trading system</li> <li>• Settlement</li> <li>• \$503,627.50 penalty</li> </ul>

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		<ul style="list-style-type: none"> <li>• Included \$303,627.50 disgorgement</li> <li>• <b>5-year suspension direct or indirect access to ICE US</b></li> </ul>
<a href="#">2015-088 and 2015-113 (2 of 4)</a>	2016*	<ul style="list-style-type: none"> <li>• Broker failed to comply with recordkeeping requirements when handling customer orders</li> <li>• Multiple instances misreported block execution time</li> <li>• One instance of submitting block trade below Minimum Quantity Requirement (“MQR”)</li> <li>• Failing to record and maintain oral communications that led to block trade</li> <li>• Firm failed to supervise</li> <li>• Settlement</li> <li>• \$250k penalty</li> <li>• Agreed to add additional compliance staff within 120 days</li> <li>• Agreed to cooperate with periodic ongoing audits</li> </ul>
<a href="#">2015-114 (3 of 4)</a>	2016*	<ul style="list-style-type: none"> <li>• Individual executed 25 fictitious transactions</li> <li>• Individual used personal electronic trading system ID of a co-worker.</li> <li>• Settlement</li> <li>• \$100k penalty</li> <li>• <b>9 month ban direct or indirect access to ICE US</b></li> </ul>
<a href="#">2015-114 (4 of 4)</a>	2016*	<ul style="list-style-type: none"> <li>• Entity engaged in practices detrimental to just and equitable practices of trade</li> <li>• Settlement</li> <li>• <b>Permanent ban from direct or indirect access to ICE US</b></li> </ul>
<a href="#">2015-037</a>	2016*	<ul style="list-style-type: none"> <li>• ATS successively entered orders in back month cocoa futures</li> <li>• Rapidly reacted to orders just placed by deleting orders and immediately entering new orders</li> <li>• Feedback loop</li> <li>• ATS entered and deleted an excessive number of orders within one-thousandth of a second between 23/01/15-9/03/15</li> <li>• Settlement</li> <li>• \$20k</li> </ul>

<b>Total penalties 2016</b>	<ul style="list-style-type: none"> <li>• 1,341,428.75</li> </ul>
Total volumes 31/12/16	<ul style="list-style-type: none"> <li>• 370,166,155</li> </ul>
Post-tax profit 31/12/16	<ul style="list-style-type: none"> <li>• Not published separately</li> </ul>
2016 themes	<ul style="list-style-type: none"> <li>• Record keeping breach (x7), position limit breach (x4), block trade violations (x6), inaccurate or failed</li> </ul>

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	<p>reporting, e.g. open interest (x1), ATS malfunction or improper oversight (x1), failure to supervise or have proper procedures (x7), wash / accommodation trades (x2), layering and spoofing (x4), failure to appear (x2), sharing unique IDs (x2), disclosing customer ID without consent (x1), fictitious trades or inequitable trades (x3)</p>
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Ref	Year	Summary
<a href="#">2016-036</a>	2017*	<ul style="list-style-type: none"> <li>• Individual executed pre-arranged wash trades in natural gas between parent and a wholly owned subsidiary</li> <li>• Settlement</li> <li>• \$7.5k penalty</li> </ul>
<a href="#">2016-036</a>	2017*	<ul style="list-style-type: none"> <li>• Individual executed pre-arranged wash trades in natural gas between parent and a wholly owned subsidiary</li> <li>• Settlement</li> <li>• \$7.5k penalty</li> </ul>
<a href="#">2016-048</a>	2017*	<ul style="list-style-type: none"> <li>• Fund inadvertently held an intraday Henry Hub position over the limit</li> <li>• Settlement</li> <li>• \$10k penalty</li> <li>• \$78,847.50 profits disgorged</li> </ul>
<a href="#">2016-003</a>	2017*	<ul style="list-style-type: none"> <li>• Held intraday position more than limits on multiple occasions</li> <li>• Settlement</li> <li>• \$50,465 penalty</li> <li>• Included disgorgement \$2,965</li> </ul>
<a href="#">2015-038</a>	2017*	<ul style="list-style-type: none"> <li>• Parent and subsidiary executed 16 wash trades with one another in Sugar No 11</li> <li>• Purpose to affect position transfers</li> <li>• Failure to supervise</li> <li>• \$25k penalty x 2</li> </ul>
<a href="#">2015-093</a>	2017*	<ul style="list-style-type: none"> <li>• Employee pre-hedged customer order using information obtained in a pre-execution communication with a customer</li> <li>• Settlement</li> <li>• \$50k penalty</li> <li>• \$8,090 disgorgement</li> </ul>
<a href="#">2016-015</a>	2017*	<ul style="list-style-type: none"> <li>• Held an intraday Henry Hub position over the limit</li> <li>• Settlement</li> <li>• \$10k penalty</li> <li>• \$102,945 disgorgement</li> </ul>



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Ref	Year	Summary
<a href="#">2014-090</a>	2017*	<ul style="list-style-type: none"> <li>• Individual received non-public information concerning identity and trading activity of introducing broker's customers</li> <li>• Information was not being sent to facilitate block trade transactions</li> <li>• Suspicion information could have been misused</li> <li>• Entity may not have been an eligible contract participant</li> <li>• Settlement</li> <li>• \$225k fine</li> <li>• <b>30 days ban indirect or direct all ICE energy markets</b></li> </ul>
<a href="#">2014-090</a>	2017*	<ul style="list-style-type: none"> <li>• Block trades were allocated to firm's proprietary account based on an alleged verbal standing order to an IB rather than by placing individual orders for each block</li> <li>• Failed to diligently supervise employee's activity</li> <li>• Settlement</li> <li>• \$100k penalty</li> <li>• Included \$49,080 disgorgement</li> </ul>
<a href="#">2016-037</a>	2017*	<ul style="list-style-type: none"> <li>• Individual did not monitor ATS for which he was responsible</li> <li>• ATS malfunctioned</li> <li>• Erroneously entered buys and sells at various price levels</li> <li>• Continuously retreated from best bids and offers in the market</li> <li>• Settlement</li> <li>• \$20k penalty</li> </ul>
<a href="#">2016-069</a>	2017*	<ul style="list-style-type: none"> <li>• Entity executed several blocks without being an ECP</li> <li>• Settlement</li> <li>• \$20k penalty</li> </ul>
<a href="#">2016-069</a>	2017*	<ul style="list-style-type: none"> <li>• Broker failed to contact due diligence to check that a client account executing block trades was an eligible contract participant</li> <li>• Failed to correctly denote block trades on clients' account statements</li> <li>• Settlement</li> <li>• \$100k penalty</li> <li>• Demonstrate has procedures to verify ECP status prior to permissioning accounts for blocks</li> </ul>
<a href="#">2016-085</a>	2017*	<ul style="list-style-type: none"> <li>• Firm failed to submit copy of its certified financial statement</li> <li>• Settlement</li> <li>• \$10k penalty</li> </ul>

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Ref	Year	Summary
<a href="#">2016-045</a>	2017*	<ul style="list-style-type: none"> <li>• Individual breached exchange rules on multiple occasions</li> <li>• Layering and spoofing type activity involving use of large and small orders in a three-month period</li> <li>• Sustained period – Sugar No 11</li> <li>• Settlement</li> <li>• \$200k penalty</li> <li>• Included disgorgement \$17,785.60</li> </ul>
<a href="#">2014-033</a>	2017*	<ul style="list-style-type: none"> <li>• Failure to make payment of monetary penalty</li> <li>• Denial of access until paid in full</li> </ul>
<a href="#">2015-085</a>	2017*	<ul style="list-style-type: none"> <li>• Failure to make payment of monetary penalty</li> <li>• Denial of access until paid in full</li> </ul>
<a href="#">2016-071</a>	2017*	<ul style="list-style-type: none"> <li>• Individual breached exchange rules on multiple occasions</li> <li>• Layering and spoofing type activity involving use of large and small orders in a three-month period</li> <li>• Settlement</li> <li>• \$30k penalty – considering income and financial position</li> <li>• <b>120 day ban indirect and direct access to any ICE US futures market</b></li> </ul>
<a href="#">2017-003</a>	2017*	<ul style="list-style-type: none"> <li>• Entity engaged in wash trading to move positions between accounts under common control / ownership</li> <li>• Entity should have used a back office transfer</li> <li>• Settlement</li> <li>• \$7.5k</li> </ul>
<a href="#">2016-082</a>	2017*	<ul style="list-style-type: none"> <li>• Individual at firm breached exchange rules on multiple occasions</li> <li>• Layering and spoofing type activity involving use of large and small orders</li> <li>• Settlement</li> <li>• \$25k penalty</li> <li>• Included disgorgement \$9,150</li> <li>• Firm had provided anti-spoofing training to employee</li> <li>• Firm had automated exception reports</li> <li>• Firm took immediate action after being alerted to activity by exchange, terminating employee and disciplining supervisor</li> <li>• However, one of the automated exception alerts was not enabled for cocoa during material period</li> </ul>
<a href="#">2016-041</a>	2017*	<ul style="list-style-type: none"> <li>• ATS successively entered orders in back month cotton futures</li> <li>• Rapidly reacted to orders just placed by deleting orders and immediately entering new orders</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Feedback loop</li> <li>• ATS entered and deleted an excessive number of orders within one-thousandth of a second</li> <li>• Settlement</li> <li>• \$30k penalty</li> </ul>
<a href="#">2017-006</a>	2017*	<ul style="list-style-type: none"> <li>• Entity engaged in wash trading to move positions between accounts under common control</li> <li>• Entity should have used a back office transfer</li> <li>• Settlement</li> <li>• \$7.5k joint and several penalty</li> </ul>
<a href="#">2016-082</a>	2017*	<ul style="list-style-type: none"> <li>• Individual breached exchange rules on multiple occasions</li> <li>• Layering and spoofing type activity involving use of large and small orders in a five-month period – cocoa futures</li> <li>• Settlement</li> <li>• <b>360 day ban direct and indirect on any ICE US market</b></li> </ul>
<a href="#">2016-059</a>	2017*	<ul style="list-style-type: none"> <li>• Individual entered orders on exchange’s electronic trading system for purpose of testing connectivity and confirming ATS operating as designed</li> <li>• Settlement</li> <li>• \$15k penalty</li> </ul>
<a href="#">2014-090</a>	2017*	<ul style="list-style-type: none"> <li>• Registered IB</li> <li>• Failed to supervise activities of brokers</li> <li>• Failed to supervise exercise of a power of attorney</li> <li>• Failed to comply with recordkeeping requirements</li> <li>• Voice brokers executed inadequately documented block trades</li> <li>• Accepted alleged verbal standing orders</li> <li>• Voice broker disclosed customer information</li> <li>• Settlement</li> <li>• Entity - \$442,500 penalty</li> <li>• Voice broker #1 - \$50k penalty, <b>6 week ban all exchange markets</b></li> <li>• Voice broker #2 - \$7.5k penalty</li> </ul>

<b>Total penalties 2017</b>	<ul style="list-style-type: none"> <li>• 1,270,000</li> </ul>
Total volumes 31/12/17	<ul style="list-style-type: none"> <li>• 354,504,852</li> </ul>
Post-tax profit 31/12/17	<ul style="list-style-type: none"> <li>• Not published separately</li> </ul>

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2017 themes	<ul style="list-style-type: none"> <li>Recordkeeping breach (x4), block trade violations (x4), improper personal account dealing, front running or pre-hedging (x2), ATS malfunction or improper oversight (x3), failure to supervise or have procedures (x3), wash / accommodation trades (x5), layering and spoofing (x4), disclosure customer ID without consent (x1), failure to submit annual statements (x1), failure to pay penalty (x2)</li> </ul>
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Ref	Year	Summary
<a href="#">2016-076</a>	2018*	<ul style="list-style-type: none"> <li>Entity held position more than gas spot limit</li> <li>Settlement</li> <li>\$7.5k penalty</li> </ul>
<a href="#">2016-092</a>	2018*	<ul style="list-style-type: none"> <li>Broker failed to submit daily large trader reports with respect to reportable customer positions</li> <li>Five occasions holding futures position more than limits</li> <li>Failure to maintain adequate procedures to report large positions</li> <li>Settlement</li> <li>\$75k penalty</li> </ul>
<a href="#">2016-077</a>	2018*	<ul style="list-style-type: none"> <li>Individual breached exchange rules on multiple occasions</li> <li>Layering and spoofing type activity involving use of large and small orders in a nine-month period – Cotton No.2</li> <li>No customer harm</li> <li>Settlement</li> <li>\$100k penalty</li> <li><b>10 business day ban – direct or indirect trading any ICE US market</b></li> </ul>
<a href="#">2017-026</a>	2018*	<ul style="list-style-type: none"> <li>Entity executed wash trades with an affiliate to affect position transfers</li> <li>Two occasions – Cotton futures</li> <li>No customer harm</li> <li>Settlement</li> <li>\$20k penalty</li> </ul>
<a href="#">2017-058</a>	2018*	<ul style="list-style-type: none"> <li>Individual executed 27 trades in Coffee futures between his employer’s account and his own account</li> <li>Voluntary repayment of money improperly transferred</li> <li>Settlement</li> <li><b>3-year ban – all ICE US markets</b></li> <li>\$40k penalty</li> </ul>
<a href="#">2017-077</a>	2018*	<ul style="list-style-type: none"> <li>Entity failed to use crossing order on several occasions</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• \$2.5k fine</li> </ul>
<a href="#">2017-059</a>	2018*	<ul style="list-style-type: none"> <li>• Member misreported open interest for one trade date</li> <li>• Several products</li> <li>• Settlement</li> <li>• \$15k fine</li> </ul>
<a href="#">2017-071</a>	2018*	<ul style="list-style-type: none"> <li>• Employee at entity failed to submit crossing orders into electronic trading system for two transactions resulting from pre-execution communications</li> <li>• No customer detriment</li> <li>• Settlement</li> <li>• \$5k penalty</li> </ul>
<a href="#">2017-007</a>	2018*	<ul style="list-style-type: none"> <li>• Bank failed to submit daily large trader reports with respect to reportable customer positions</li> <li>• Five instances of maintaining futures position more than applicable limits</li> <li>• Failure to supervise</li> <li>• Settlement</li> <li>• \$71,107.50 penalty</li> <li>• Included \$21,107.50 disgorgement</li> </ul>
<a href="#">2016-092</a>	2018*	<ul style="list-style-type: none"> <li>• Entity held six Henry Hub positions more than spot position limit</li> <li>• Settlement</li> <li>• \$44,342.52 penalty</li> <li>• Included \$29,342.50 disgorgement</li> </ul>
<a href="#">2017-068</a>	2018*	<ul style="list-style-type: none"> <li>• Broker failed to report block at index close trades in a timely manner</li> <li>• Fine</li> <li>• \$2.5k penalty</li> </ul>
<a href="#">2017-062</a>	2018*	<ul style="list-style-type: none"> <li>• Individual submitted block trades outside 15-minute window</li> <li>• Brokered two sugar/refined sugar contracts between same clients, two exchange legs immediately offset</li> <li>• Caused unnecessary brokerage between clients</li> <li>• Settlement</li> <li>• \$8.5k penalty</li> </ul>
<a href="#">2017-062</a>	2018*	<ul style="list-style-type: none"> <li>• Firm failed to submit documents, books or records requested by compliance staff in a timely manner basis previous action</li> <li>• Settlement</li> <li>• \$25k penalty</li> <li>• \$3k restitution to customers</li> </ul>
<a href="#">2017-053</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to report correct execution time for eight block trades</li> <li>• Summary fine</li> <li>• \$7.5k</li> </ul>

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Ref	Year	Summary
<a href="#">2018-018</a>	2018*	<ul style="list-style-type: none"> <li>• Member misreported open interest on one trade date in coffee futures</li> <li>• Summary fine</li> <li>• \$7.5k</li> </ul>
<a href="#">SUMMARY ACCESS DENIAL 18-01</a>	2018*	<ul style="list-style-type: none"> <li>• Individual summarily denied access to all ICE US markets for a period of 60 days</li> <li>• Direct and indirect access</li> <li>• Individual placed orders he did not intend to trade at time of entry</li> <li>• Layering and spoofing type behaviour</li> </ul>
<a href="#">2018-010</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to report block trades in a timely manner on multiple occasions</li> <li>• Summary fine</li> <li>• \$10k</li> </ul>
<a href="#">2018-019</a>	2018*	<ul style="list-style-type: none"> <li>• Failed to report open interest in a FCOJ contract on one occasion</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<a href="#">2018-020</a>	2018*	<ul style="list-style-type: none"> <li>• Member reported inaccurate open interest on one trade date for a coffee futures contract</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<a href="#">2017-052</a>	2018*	<ul style="list-style-type: none"> <li>• Entity may have failed to comply with recordkeeping requirements applicable to customer order handling on several occasions</li> <li>• Block trades</li> <li>• Submitted block trades late</li> <li>• One broker accidentally disclosed identity of customer</li> <li>• Failure to adequately supervise</li> <li>• Settlement</li> <li>• \$42.5k</li> </ul>
<a href="#">2017-030</a>	2018*	<ul style="list-style-type: none"> <li>• Employee of firm engaged in layering and spoofing type activities</li> <li>• Firm found to have insufficient policies, procedures, and systems in place to train and monitor employees</li> <li>• Cocoa futures</li> <li>• Settlement</li> <li>• \$9k</li> </ul>
<a href="#">2017-049</a>	2018*	<ul style="list-style-type: none"> <li>• Firm's traders entered order messages on an ATS</li> <li>• Simultaneously used same IDs to enter orders manually</li> <li>• Entered orders on live platform for testing purposes</li> <li>• Settlement</li> <li>• \$22.5k</li> </ul>

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Ref	Year	Summary
<a href="#">2017-030</a>	2018*	<ul style="list-style-type: none"> <li>• Individual manual trader engaged in layering and spoofing type activity in cocoa futures</li> <li>• No customer harm</li> <li>• Settlement</li> <li>• \$25k</li> <li>• <b>2-week suspension – ICE US</b></li> </ul>
<a href="#">2018-007</a>	2018*	<ul style="list-style-type: none"> <li>• Wash trade in cotton no.2</li> <li>• Move position between accounts owned and controlled by a client</li> <li>• Position could not be moved via a transfer as after first notice day</li> <li>• Settlement</li> <li>• \$7.5k</li> </ul>
<a href="#">2017-066</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<a href="#">2017-066</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<a href="#">2017-066G</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<a href="#">2017-066</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<a href="#">2017-066</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<a href="#">2018-016</a>	2018*	<ul style="list-style-type: none"> <li>• Member failed to report block at index close trades in a timely manner</li> <li>• Summary fine</li> <li>• \$7.5k</li> </ul>
<a href="#">2017-066</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<a href="#">2017-066</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• \$2.5k</li> </ul>
<a href="#">2017-066</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<a href="#">2017-066</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<a href="#">2017-066</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<a href="#">2017-066</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<a href="#">2017-078</a>	2018*	<ul style="list-style-type: none"> <li>• Employee had discretion to trade for entity and its affiliate</li> <li>• Executed trades between accounts for purposes of moving a position</li> <li>• Position had been unintentionally booked into wrong account</li> <li>• Firm to prompt remedial action</li> <li>• Settlement</li> <li>• \$5k</li> </ul>
<a href="#">2017-047</a>	2018*	<ul style="list-style-type: none"> <li>• Entity deployed semi-automated trading system</li> <li>• Entered orders at prices significantly away from prevailing bid/offer</li> <li>• No intent to execute bona fide transactions</li> <li>• Failure to adequately test ATS prior to live deployment</li> <li>• Settlement</li> <li>• \$37.5k</li> </ul>
<a href="#">2017-001</a>	2018*	<ul style="list-style-type: none"> <li>• Individual manual trader engaged in layering and spoofing type activity in cocoa futures</li> <li>• Settlement</li> <li>• \$15k fine</li> <li>• <b>9-week suspension, direct / indirect access ICE US markets</b></li> </ul>
<a href="#">2017-066</a>	2018*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>



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Ref	Year	Summary
<a href="#">2018-034</a>	2018*	<ul style="list-style-type: none"> <li>• Reported inaccurate open interest figures for two trade dates in November</li> <li>• Coffee futures</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>

<b>Total penalties 2018</b>	<ul style="list-style-type: none"> <li>• 612,500</li> </ul>
Total volumes 31/12/18	<ul style="list-style-type: none"> <li>• 339,098,657</li> </ul>
Post-tax profit 31/12/18	<ul style="list-style-type: none"> <li>• Not published separately</li> </ul>
2018 themes	<ul style="list-style-type: none"> <li>• Recordkeeping breach (x14), position limit breach (x4), failure to use correct order type / observe crossing rules or enter price outside limit (x2), block trade violations (x6), inaccurate or failed reporting, e.g. open interest or daily position reporting (x7), improper personal account dealing (x1), ATS malfunction or improper oversight (x2), failure to supervise or have procedures (x2), wash or accommodation trades (x3), layering and spoofing (x5), failure to appear (x1), sharing unique IDs (x1),</li> </ul>

Ref	Year	Summary
<a href="#">2017-066</a>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2016</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<a href="#">2018-035</a>	2019*	<ul style="list-style-type: none"> <li>• Member reported inaccurate open interest on one trade date for a FCOJ-A futures contract</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<a href="#">2017-001</a>	2019*	<ul style="list-style-type: none"> <li>• Individual summarily denied access to all ICE US markets</li> <li>• Failed to pay monetary penalty</li> </ul>
<a href="#">2018-036</a>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to use crossing functionality to expose order to market for 5 seconds</li> <li>• Summary fine</li> <li>• \$10k</li> </ul>
<a href="#">2016-063</a>	2019*	<ul style="list-style-type: none"> <li>• Individual found to have engaged in manipulative and deceptive practices</li> <li>• Caused participants to trade at artificial prices</li> <li>• Entered offers fell close to historical prices</li> <li>• Looked advantageous</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Participants believed they were trading peak future, when were trading the off-peak</li> <li>• They failed to report as a result</li> <li>• Individual unwittingly fell victim to conduct he had initiated</li> <li>• Settlement</li> <li>• \$85k</li> <li>• <b>9 month ban ICE US</b></li> </ul>
<u>2016-063</u>	2019*	<ul style="list-style-type: none"> <li>• Failed to accurately report open interest in a FCOJ contract on one occasion</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2017-041</u>	2019*	<ul style="list-style-type: none"> <li>• Individual trader engaged in layering and spoofing type activities using Iceberg orders</li> <li>• Coffee, cocoa, sugar</li> <li>• Settlement</li> <li>• <b>Permanent suspension ICE US</b></li> </ul>
<u>2017-014a</u>	2019*	<ul style="list-style-type: none"> <li>• Member failed to assign unique IDs to registered operators</li> <li>• Transmitted orders on behalf of foreign FCM that did not include these</li> <li>• Appeared to be result of a software error</li> <li>• Overrode those unique IDs at foreign FCM</li> <li>• After identified by exchange, firm took steps to address it</li> <li>• Settlement</li> <li>• \$50k</li> </ul>
<u>2017-023</u>	2019*	<ul style="list-style-type: none"> <li>• Individual entered and then cancelled orders during pre-open.</li> <li>• No intent to trade</li> <li>• Sought to determine market depth, effect on indicative opening price</li> <li>• Caused fluctuations unrepresentative of true market state</li> <li>• Settlement</li> <li>• \$50k</li> <li>• <b>One week ban ICE US</b></li> </ul>
<u>2017-073</u>	2019*	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Manual trader</li> <li>• Russell 2000 futures</li> <li>• Settlement</li> <li>• \$40k</li> <li>• <b>One month ban ICE US</b></li> </ul>

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<b>Ref</b>	<b>Year</b>	<b>Summary</b>
<u>2019-023</u>	2019*	<ul style="list-style-type: none"> <li>• Member reported inaccurate open interest on two trade dates for a sugar futures contract</li> <li>• Misreporting of large trade positions and open interest sugar futures</li> <li>• Summary fine</li> <li>• \$7.5k</li> </ul>
<u>2019-021</u>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system December 2017</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2019-022</u>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system October 2017 and December 2018</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2017-050</u>	2019*	<ul style="list-style-type: none"> <li>• Failed to comply with order recordkeeping requirements</li> <li>• Between January – July 2017</li> <li>• Misreported block trade execution times</li> <li>• Settlement</li> <li>• \$125k</li> </ul>
<u>2019-032</u>	2019*	<ul style="list-style-type: none"> <li>• Member reported inaccurate open interest on several trade dates for FCOJ contract</li> <li>• Summary fine</li> <li>• \$10k</li> </ul>
<u>2019-021/022</u>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system August 2017 and December 2018</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2017-073</u>	2019*	<ul style="list-style-type: none"> <li>• Individual summarily denied access to all ICE US markets</li> <li>• Failed to pay monetary penalty</li> </ul>
<u>2019-026</u>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to report block trade within 15 minutes</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<u>2017-050</u>	2019*	<ul style="list-style-type: none"> <li>• Entity denied access to ICE US markets for failure to pay penalty</li> <li>• In force until paid in full</li> </ul>
<u>2019-021-022</u>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system several dates in 2017 and 2018</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>

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Ref	Year	Summary
<u>2019-036</u>	2019*	<ul style="list-style-type: none"> <li>• Firm inaccurately reported open interest in sugar for ten consecutive trade dates</li> <li>• Summary fine</li> <li>• \$10k</li> </ul>
<u>2019-022</u>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2018</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2019-021-022</u>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2017 and 2018</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2019-021-022</u>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system several dates in 2017 and 2018</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<u>2019-022</u>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system several dates in 2018</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<u>2019-021-022</u>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2017 and 2018</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2017-024</u>	2019*	<ul style="list-style-type: none"> <li>• Former employee of entity entered orders pre-open without intent to trade</li> <li>• Tried to ascertain effect on indicative opening price</li> <li>• Failure to supervise</li> <li>• Firm did not profit from the activity</li> <li>• Settlement</li> <li>• \$40k</li> </ul>
<u>2017-024</u>	2019*	<ul style="list-style-type: none"> <li>• Facts as above</li> <li>• Individual – Sugar 11, Cocoa</li> <li>• Settlement</li> <li>• <b>6 month ban ICE US</b></li> </ul>
<u>2018-026</u>	2019*	<ul style="list-style-type: none"> <li>• Individual entered several orders for purposes of determining market depth</li> <li>• Weren't bona fide</li> <li>• Settlement</li> <li>• \$22.5k</li> </ul>
<u>2018-026</u>	2019*	<ul style="list-style-type: none"> <li>• Individual entered several orders at off market rates for purposes of determining market depth</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Weren't bona fide</li> <li>• Settlement</li> <li>• \$17.5k</li> </ul>
<u>2018-033</u>	2019*	<ul style="list-style-type: none"> <li>• Firm breached block trade rules on several occasions</li> <li>• Failure to report within 15 minutes</li> <li>• Failure to explicitly state order may be executed by a means of a block trade</li> <li>• Failure to supervise</li> <li>• Remedial action taken</li> <li>• Settlement</li> <li>• \$200k</li> </ul>
<u>2018-029</u>	2019*	<ul style="list-style-type: none"> <li>• Entity failed to meet minimum thresholds for block trades</li> <li>• Failed to comply with order ticket requirements</li> <li>• Misreported execution time for block trades</li> <li>• Submitted block trades beyond 15-minute reporting window</li> <li>• Disclosing identities of customers without receiving express consent</li> <li>• Failure to supervise</li> <li>• Settlement</li> <li>• \$70k</li> </ul>
<u>2019-021-022</u>	2019	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system several dates in 2017 and 2018</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<u>2019-021-022</u>	2019	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system 2017 and 2018</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2019-021-022</u>	2019	<ul style="list-style-type: none"> <li>• Entity failed to retain electronic audit trail data</li> <li>• Orders into electronic trading system several dates in 2017 and 2018</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>

<b>Total penalties 2019</b>	<ul style="list-style-type: none"> <li>• 810,000</li> </ul>
Total volumes 31/12/19	<ul style="list-style-type: none"> <li>• 324,806,936</li> </ul>
Post-tax profit 31/12/19	<ul style="list-style-type: none"> <li>• Not published separately</li> </ul>

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2019 themes	<ul style="list-style-type: none"> <li>Recordkeeping breach (x15), failure to expose for 5 seconds (x1), block trade violations (x4), inaccurate or failed reporting, e.g. open interest or daily positions (x5), failure to supervise or have procedures (x3), layering or spoofing or manipulative/deceptive or entering orders without intent to trade (x8), sharing unique IDs or ID allocation errors (x1), disclosure of customer ID without consent (x1), failure to pay penalty (x3)</li> </ul>
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Ref	Year	Summary
<u>2019-006</u>	2020*	<ul style="list-style-type: none"> <li>Entity failed to report correct execution time several block trades between October 2018 – April 2019</li> <li>Summary fine</li> <li>\$7.5k</li> </ul>
<u>2018-037</u>	2020*	<ul style="list-style-type: none"> <li>One of firm’s brokers executed a wash trade</li> <li>Firm failed to scrutinise the transaction</li> <li>Settlement</li> <li>\$10k</li> </ul>
<u>2018-037</u>	2020*	<ul style="list-style-type: none"> <li>Two entities with common ownership executed a wash trade between one another</li> <li>Purpose to move position between accounts</li> <li>Not a bona fide transaction</li> <li>Reported a block trade a day late</li> <li>Trade reported as a type of block when it may not have met the required criteria</li> <li>Settlement</li> <li>\$40k collective penalty</li> </ul>
<u>2019-001</u>	2020*	<ul style="list-style-type: none"> <li>Individual engaged in layering and spoofing activity</li> <li>Cotton, cocoa, coffee, sugar futures</li> <li>Settlement</li> <li><b>Two week ban ICE US</b></li> <li>\$130k</li> </ul>
<u>2019-001</u>	2020*	<ul style="list-style-type: none"> <li>Firm’s employee engaged in layering and spoofing type activity (see previous)</li> <li>Settlement</li> <li>Disgorgement \$86,999</li> </ul>
<u>2017-014</u>	2020*	<ul style="list-style-type: none"> <li>Individual engaged in layering and spoofing activity</li> <li>Sugar futures</li> <li>Settlement</li> <li><b>Two month ban ICE US</b></li> </ul>
<u>2019-037</u>	2020*	<ul style="list-style-type: none"> <li>Entity failed to assign unique trader ID / trader affiliations on several orders</li> <li>Summary fine</li> <li>\$2k</li> </ul>

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Ref	Year	Summary
<u>2019-033</u>	2020*	<ul style="list-style-type: none"> <li>• Entity failed to accurately report large trader positions</li> <li>• Summary fine</li> <li>• \$10k</li> </ul>
<u>2019-020</u>	2020*	<ul style="list-style-type: none"> <li>• Entity failed to accurately report open interest large trader positions</li> <li>• Summary fine</li> <li>• \$10k</li> </ul>
<u>2019-027</u>	2020*	<ul style="list-style-type: none"> <li>• Individual placed buy and sell orders on behalf of two customers in wrong direction by accident</li> <li>• When trading out of the positions, individual sought to reduce loss to his firm's error account to detriment of customers</li> <li>• Executed block trade without consent and required documentation</li> <li>• Voluntary restitution by employer \$11,030</li> <li>• Employer miscalculated, owed an additional \$1,395 but this was rejected by the clients</li> <li>• Settlement</li> <li>• \$20k</li> <li>• <b>Two week ban ICE US</b></li> </ul>
<u>2019-027</u>	2020*	<ul style="list-style-type: none"> <li>• Entity failed to inform employee of exchange rules and scrutinise block trade – see previous case</li> <li>• Settlement</li> <li>• \$30k</li> </ul>
<u>2020-008</u>	2020*	<ul style="list-style-type: none"> <li>• Entity failed to accurately report open interest large trader positions</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2019-025</u>	2020*	<ul style="list-style-type: none"> <li>• Entity failed to report block trades within 15 minutes</li> <li>• Summary fine</li> <li>• \$10k</li> </ul>
<u>2019-003</u>	2020*	<ul style="list-style-type: none"> <li>• Entity failed to populate unique IDs</li> <li>• Period lasting more than a year</li> <li>• Transmitted via ISV, software error overrode IDs assigned by entity</li> <li>• Once identified, entity acted to resolve</li> <li>• Settlement</li> <li>• \$55k</li> </ul>
<u>2019-003</u>	2020*	<ul style="list-style-type: none"> <li>• Entity failed to assign unique trade ID to each of its traders</li> <li>• Allowed traders to use same ID</li> <li>• Five-year period</li> <li>• Failed to implement procedures to ensure compliance with exchange rules</li> <li>• Cotton</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Settlement</li> <li>• \$55k</li> </ul>
<u>2019-008</u>	2020*	<ul style="list-style-type: none"> <li>• Firm failed to satisfy private negotiation requirements for block trades on numerous occasions</li> <li>• Matched counterparties without bilateral discussions</li> <li>• Failed to record all/some oral / written communications around such trades</li> <li>• Misreported execution times</li> <li>• Submitted outside 15- minute window</li> <li>• Bunching separate trades as one block trade</li> <li>• Disclosing customer IDs without consent</li> <li>• Failure to supervise</li> <li>• Settlement</li> <li>• \$520k</li> <li>• Agreed to enhance compliance manual</li> </ul>
<u>2020-026</u>	2020*	<ul style="list-style-type: none"> <li>• Entity reported inaccurate open interest for one contract, one trade date</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2019-019,</u> <u>2019-045,</u> <u>2020-005</u>	2020*	<ul style="list-style-type: none"> <li>• Three employees of firm engaged in layering and spoofing type behaviour</li> <li>• Firm failed to have policies, procedures, and systems to train employees and monitor their activities</li> <li>• Canola, cotton, sugar</li> <li>• Settlement</li> <li>• \$75k</li> <li>• \$3,492 disgorgement</li> </ul>
<u>2020-005</u>	2020*	<ul style="list-style-type: none"> <li>• Employee of firm referred to in case above</li> <li>• Settlement</li> <li>• \$35k</li> <li>• \$4,296 disgorgement</li> <li>• <b>3 month ban ICE US</b></li> </ul>
<u>2019-045</u>	2020*	<ul style="list-style-type: none"> <li>• Employee of firm referred to in case above</li> <li>• Settlement</li> <li>• \$50k</li> <li>• \$5,684 disgorgement</li> <li>• <b>4 month ban ICE US</b></li> </ul>
<u>2019-019</u>	2020*	<ul style="list-style-type: none"> <li>• Employee of firm referred to in case above</li> <li>• Settlement</li> <li>• \$35k</li> <li>• \$3,988 disgorgement</li> <li>• <b>3 month ban ICE US</b></li> </ul>
<u>2017-056</u>	2020*	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> </ul>



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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Russell Futures</li> <li>• Settlement</li> <li>• \$71,644.50 disgorgement</li> <li>• <b>18-month ban</b></li> </ul>
<u>2020-031</u>	2020*	<ul style="list-style-type: none"> <li>• Entity reported inaccurate open interest figures, coffee, one date</li> <li>• Summary fine</li> <li>• \$10k</li> </ul>
<u>2020-019</u>	2020*	<ul style="list-style-type: none"> <li>• Entity reported inaccurate open interest figures, cocoa, one date</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<u>2020-007</u>	2020*	<ul style="list-style-type: none"> <li>• Entity failed to transfer ownership of electronic warehouse receipts in cotton by deadline</li> <li>• Settlement</li> <li>• \$10k</li> </ul>
<u>2019-015</u>	2020*	<ul style="list-style-type: none"> <li>• Entity executed block trades below minimum quantity required</li> <li>• Misreported execution times</li> <li>• Submitted blocks outside 15-minute window</li> <li>• Failed to comply with order ticket requirements</li> <li>• Failed to supervise</li> <li>• Settlement</li> <li>• \$35k</li> </ul>
<u>2019-010</u>	2020*	<ul style="list-style-type: none"> <li>• Entity misreported execution times block trades</li> <li>• Submitted blocks outside 15-minute window</li> <li>• Failed to supervise</li> <li>• Settlement</li> <li>• \$100k</li> </ul>
<u>2019-010</u>	2020*	<ul style="list-style-type: none"> <li>• Entity misreported execution times block trades</li> <li>• Failed to supervise</li> <li>• Settlement</li> <li>• \$25k</li> </ul>

<b>Total penalties 2020</b>	<ul style="list-style-type: none"> <li>• 1,287,000</li> </ul>
Total volumes 31/12/20	<ul style="list-style-type: none"> <li>• 365,537,704</li> </ul>
Post-tax profit 31/12/20	<ul style="list-style-type: none"> <li>• Not published separately</li> </ul>
2020 themes	<ul style="list-style-type: none"> <li>• Physical breach (x1), record keeping breach (x4), block trade violations (x8), inaccurate reporting, e.g.</li> </ul>

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	<p>open interest or daily positions (x6), failure to supervise or have procedures (x6), wash trades / accommodation (x2), layering or spoofing / manipulative or deceptive trading or otherwise entering trades without intent to trade (x9), sharing unique IDs / ID allocation errors (x3)</p>
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Ref	Year	Summary
<u>2017-056</u>	2021*	<ul style="list-style-type: none"> <li>• Entity failed to request hearing, file, and answer to charges</li> <li>• Entity, via one of its traders, engaged in layering and spoofing type activities</li> <li>• Penalty</li> <li>• Entity permanently barred from ICE US</li> </ul>
<u>2019-030</u>	2021*	<ul style="list-style-type: none"> <li>• Entity failed to submit large trader reports on multiple occasions</li> <li>• Failed to have processes to properly report large positions</li> <li>• Settlement</li> <li>• \$75k</li> </ul>
<u>2019-039</u>	2021*	<ul style="list-style-type: none"> <li>• Firm failed to satisfy private negotiation requirements for block trades on numerous occasions</li> <li>• Matched counterparties without bilateral discussions</li> <li>• Failed to record all/some oral / written communications around such trades</li> <li>• Misreported execution times</li> <li>• Submitted outside 15-minute window</li> <li>• Disclosing customer IDs without consent</li> <li>• Failure to supervise</li> <li>• Failure to produce books and records in a timely manner</li> <li>• Settlement</li> <li>• \$60k</li> </ul>
<u>2019-028</u>	2021*	<ul style="list-style-type: none"> <li>• Failed to comply with order ticket requirements</li> <li>• Misreported execution time for block trades</li> <li>• Submitted block trades beyond 15-minute reporting window</li> <li>• Disclosing identities of customers without receiving express consent</li> <li>• Failure to supervise</li> <li>• Settlement</li> <li>• \$37.5k</li> </ul>
<u>2020-003</u>	2021*	<ul style="list-style-type: none"> <li>• Entity inadvertently twice held position in spot month Henry Hub over limit</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Failed to report on of the breaches to exchange after being notified by one of its traders</li> <li>• Settlement</li> <li>• \$20k</li> </ul>
<u>2019-040</u>	2021*	<ul style="list-style-type: none"> <li>• Firm’s brokers entered and executed large stop limit orders in coffee futures on behalf of customers</li> <li>• Reckless disregard for impact of orders on market</li> <li>• Caused disruptive price movements</li> <li>• Failure to properly train and supervise brokers</li> <li>• Settlement</li> <li>• \$25k</li> </ul>
<u>2019-041</u>	2021*	<ul style="list-style-type: none"> <li>• Entities executed transaction without corresponding exchange of physical position</li> <li>• Non-bona fide EFP cotton futures</li> <li>• Arranged transactions to transfer position</li> <li>• Settlement</li> <li>• \$10k</li> </ul>
<u>2020-004</u>	2021*	<ul style="list-style-type: none"> <li>• Entity’s trade matched trades with an affiliate on two dates</li> <li>• Wash trades</li> <li>• Had control over both accounts</li> <li>• Done to move positions</li> <li>• Settlement</li> <li>• \$20k</li> </ul>
<u>2020-023</u>	2021*	<ul style="list-style-type: none"> <li>• Entity failed to assign ATS a unique ID for routing orders to exchange’s ETS</li> <li>• Summary fine</li> <li>• \$2k</li> </ul>
<u>2021-013</u>	2021	<ul style="list-style-type: none"> <li>• Entity failed to affix authorised trader identifications – Tag 116 on multiple orders</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2020-018</u>	2021*	<ul style="list-style-type: none"> <li>• Entity held positions in spot month Henry Hub over limit on several occasions without complying with terms of spread exemption</li> <li>• Firm did not have adequate policies and procedures to monitor positions or compliance with spread exemption</li> <li>• Failed to comply with exchange’s requests in a timely manner</li> <li>• Settlement</li> <li>• \$700k</li> </ul>
<u>2019-029</u>	2021*	<ul style="list-style-type: none"> <li>• Former broker used customer accounts to engage in disruptive trading</li> <li>• Layering and spoofing type behaviour</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Placing orders on behalf of customers without their knowledge</li> <li>• Failure to appear during investigation</li> <li>• Former employer became aware of this through supervision before investigation by ICE US</li> <li>• Former customer made clients good, took trades into error account and realised loss itself</li> <li>• Cotton No2</li> <li>• Settlement</li> <li>• <b>Permanent ban</b></li> </ul>
<u>2020-012</u>	2021*	<ul style="list-style-type: none"> <li>• Entity executed a wash trade via blocks to move position from one clearer to another</li> <li>• No customer harm</li> <li>• Settlement</li> <li>• \$7.5k</li> </ul>
<u>2020-028</u>	2021*	<ul style="list-style-type: none"> <li>• Entity failed to report block at index close transaction</li> <li>• Settlement</li> <li>• \$7.5k</li> </ul>
<u>2021-003</u>	2021*	<ul style="list-style-type: none"> <li>• Entity failed to affix authorised trader identifications – Tag 116 on multiple orders</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<u>2020-015E</u>	2021*	<ul style="list-style-type: none"> <li>• Entity transferred positions between customer accounts without first obtaining exchange approval</li> <li>• Cocoa futures</li> <li>• Settlement</li> <li>• \$25k</li> </ul>
<u>2020-011</u>	2021*	<ul style="list-style-type: none"> <li>• Entity and its co-owner entered orders at off-market rates</li> <li>• Made it seem advantages trading opportunity available to other market participants</li> <li>• Settlement</li> <li>• Joint \$65k fine</li> <li>• <b>10-day ICE US ban co-owner</b></li> </ul>
<u>2020-015</u>	2021*	<ul style="list-style-type: none"> <li>• Entity transferred positions between customer accounts without first obtaining exchange approval</li> <li>• Entity self-reported</li> <li>• Cocoa futures</li> <li>• Settlement</li> <li>• \$12.5k</li> </ul>
<u>2019-020</u>	2021*	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type behaviour</li> <li>• Canola futures</li> <li>• Settlement</li> <li>• \$27.5k penalty</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• \$876.54 disgorgement</li> <li>• <b>10-day ban</b></li> </ul>
<u>2019-003</u>	2021*	<ul style="list-style-type: none"> <li>• Individual trade for personal account against account of employer</li> <li>• Individual had authority over employer's trading accounts</li> <li>• Pass equity or execute offsetting transactions</li> <li>• Did without employer's knowledge, against employer's policies</li> <li>• Failed to testify</li> <li>• Penalty</li> <li>• <b>Permanent ban ICE US</b></li> <li>• Restitution \$1,076,160</li> </ul>
<u>2019-043</u>	2021*	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type behaviour</li> <li>• Failed to testify</li> <li>• Coffee futures</li> <li>• Penalty</li> <li>• <b>Permanent ban ICE US</b></li> </ul>
<u>2020-017</u>	2021*	<ul style="list-style-type: none"> <li>• Entity's trader accidentally self-matched a sugar order</li> <li>• Settlement</li> <li>• \$7.5k</li> </ul>
<u>2020-013</u>	2021*	<ul style="list-style-type: none"> <li>• Firm failed to satisfy private negotiation requirements for block trades on numerous occasions</li> <li>• Entity failed to meet minimum thresholds for block trades</li> <li>• Misreported execution times</li> <li>• Submitted blocks outside 15-minute window</li> <li>• Failed to comply with order ticket requirements</li> <li>• Failed to supervise</li> <li>• Henry Hub</li> <li>• Settlement</li> <li>• \$40k</li> </ul>
<u>2020-014</u>	2021*	<ul style="list-style-type: none"> <li>• ATS malfunctioned</li> <li>• Oil futures</li> <li>• Entered bids and withdrew orders</li> <li>• Inadvertently narrowed bid/ask spreads</li> <li>• Several occasions</li> <li>• Without exchanges self-match prevention, would have resulted in wash trades</li> <li>• Entity redeployed ATS after becoming aware of activity before updates were implemented</li> <li>• Settlement</li> <li>• \$37.5k</li> </ul>

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Ref	Year	Summary
<u>2020-016</u>	2021*	<ul style="list-style-type: none"> <li>• Two entities with common beneficial ownership matched own orders</li> <li>• Should have known this</li> <li>• Settlement</li> <li>• \$7.5k collective</li> </ul>

<b>Total penalties 2021</b>	<ul style="list-style-type: none"> <li>• 1,194,500</li> </ul>
Total volumes 31/12/21	<ul style="list-style-type: none"> <li>• 329,120,972</li> </ul>
Post-tax profit 31/12/21	<ul style="list-style-type: none"> <li>• Not published separately</li> </ul>
2021 themes	<ul style="list-style-type: none"> <li>• Booking trades at off market rates (x1), disruptive trading (x1), record keeping breach (x3), position limit breach (x2), block trade violations (x4), inaccurate or failed reporting, e.g. open interest or daily positions (x1), improper personal account dealing, front running or pre-hedging (x1), ATS malfunction or improper oversight (x2), EFP breaches (x1), failure to supervise or have procedures (x4), wash trades, accommodation trades or self-matching (x4), layering and spoofing, manipulative or deceptive trading or entering orders without intent to trade (x4), failure to appear (x4), sharing unique IDs / ID allocation errors (x3), disclosure of customer ID without consent (x2), transfer rules breach (x2)</li> </ul>

Ref	Year	Summary
<u>2021-004</u>	2022*	<ul style="list-style-type: none"> <li>• Entity failed to use crossing order functionality</li> <li>• Executing options orders</li> <li>• Resulting from pre-execution communications</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2021-005</u>	2022*	<ul style="list-style-type: none"> <li>• Entity entered block trades below minimum quantity requirement</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2021-005</u>	2022*	<ul style="list-style-type: none"> <li>• Entity entered block trades below minimum quantity requirement</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2021-033</u>	2022*	<ul style="list-style-type: none"> <li>• Entity failed to provide audit trail logs from 2019</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2021-033</u>	2022*	<ul style="list-style-type: none"> <li>• Entity failed to provide audit trail logs from 2019</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2020-029</u>	2022*	<ul style="list-style-type: none"> <li>• Entity allocated buy and sell orders to same customer account, resulting in a wash trade</li> <li>• Settlement</li> <li>• \$7.5k</li> </ul>
<u>2020-035</u>	2022*	<ul style="list-style-type: none"> <li>• Entity established positions in spot month Henry Hub futures that exceed limits</li> <li>• Failure to diligently supervise employees</li> <li>• Settlement</li> <li>• \$60k</li> <li>• Disgorgement \$4,342.50</li> </ul>
<u>2020-032</u>	2022*	<ul style="list-style-type: none"> <li>• Entity failed to submit large trader reports on multiple occasions</li> <li>• Failed to have proper processes for doing this</li> <li>• Settlement</li> <li>• \$60k</li> </ul>
<u>2020-025</u>	2022*	<ul style="list-style-type: none"> <li>• Entity failed to meet minimum thresholds for block trades</li> <li>• Misreported execution times</li> <li>• Submitted blocks outside 15-minute window</li> <li>• Failed to comply with order ticket requirements</li> <li>• Failed to supervise</li> <li>• Settlement</li> <li>• \$70k</li> </ul>
<u>2017-056</u>	2022*	<ul style="list-style-type: none"> <li>• <b>Individual banned for non-payment of fine</b></li> <li>• Only lifted if paid</li> </ul>
<u>2021-020</u>	2022*	<ul style="list-style-type: none"> <li>• Entity executed cross trade without utilising crossing order</li> <li>• Also didn't wait 5 seconds</li> <li>• Receipt of two client orders for different beneficial owners</li> <li>• Summary fine</li> <li>• \$2.5k</li> </ul>
<u>2020-033</u>	2022*	<ul style="list-style-type: none"> <li>• Entity engaged in pre-hedging on several occasions in mid-2020</li> <li>• Entity executed block trade for own account against customer</li> <li>• After received agency order for customer from sale desk</li> <li>• Offset risk from customer order</li> <li>• Inappropriate</li> <li>• Realised profits of \$1,319,249.80</li> <li>• Failure to supervise</li> <li>• Settlement</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• \$125k</li> <li>• Disgorgement of profits</li> </ul>
<u>2020-039</u>	2022*	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type activity</li> <li>• Settlement</li> <li>• \$20k</li> <li>• \$198.28 disgorgement</li> <li>• <b>10-day ban ICE US</b></li> </ul>
<u>2020-039</u>	2022*	<ul style="list-style-type: none"> <li>• Entity held responsible for actions of trader mentioned in previous enforcement action</li> <li>• Failed to ensure surveillance systems working effectively</li> <li>• Settlement</li> <li>• \$20k</li> </ul>
<u>2022-013</u>	2022*	<ul style="list-style-type: none"> <li>• Entity reported inaccurate open interest and large reporting positions on multiple dates</li> <li>• Cotton No.2</li> <li>• Summary fine</li> <li>• \$10k</li> </ul>
<u>2021-009</u>	2022*	<ul style="list-style-type: none"> <li>• Individual engaged in improper pre-hedging</li> <li>• Acting in broker/agency capacity</li> <li>• Sought orders from other that were direct opposites</li> <li>• Didn't matched, withheld order for firm's prop account</li> <li>• Collected mark ups</li> <li>• Settlement</li> <li>• \$100k</li> <li>• <b>6 week ban ICE US</b></li> </ul>
<u>2021-024</u>	2022*	<ul style="list-style-type: none"> <li>• Entity reported blocks late on four occasions</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2020-022</u>	2022*	<ul style="list-style-type: none"> <li>• Two affiliates engaged in improper pre-hedging on several occasions</li> <li>• Realised profits \$225,606.80</li> <li>• Failure to supervise</li> <li>• Adopted a risk policy that may have encouraged improper pre-hedging</li> <li>• Misreporting execution time of blocks</li> <li>• Submitting blocks late</li> <li>• Failure to produce books and records in a timely manner</li> <li>• Settlement</li> <li>• \$425k collective penalty</li> <li>• Disgorge profits</li> </ul>



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Ref	Year	Summary
<u>2020-034</u>	2022*	<ul style="list-style-type: none"> <li>• Entity and its affiliate acted together to enable entity to establish a cotton position more than limit</li> <li>• Entity used a trader ID belonging to affiliate to benefit itself</li> <li>• Hide position more than limit in affiliate’s account</li> <li>• Entity’s employees instituted pre-arranged trades to move positions between accounts</li> <li>• Kept position more than limits</li> <li>• Failure to supervise</li> <li>• Settlement</li> <li>• \$3m fine entity</li> <li>• \$300k fine affiliate</li> </ul>
<u>2021-009</u>	2022*	<ul style="list-style-type: none"> <li>• Entity engaged in pre-hedging on several occasions in 2020 and 2021</li> <li>• Entity executed block trade for own account against customer</li> <li>• After received agency order for customer from sale desk</li> <li>• Offset risk from customer order</li> <li>• Inappropriate</li> <li>• Collected mark ups</li> <li>• Profits \$211,750</li> <li>• Firm failed to satisfy private negotiation requirements for block trades on numerous occasions</li> <li>• Entity failed to meet minimum thresholds for block trades</li> <li>• Misreported execution times</li> <li>• Submitted blocks outside 15-minute window</li> <li>• Failed to comply with order ticket requirements</li> <li>• Failed to supervise</li> <li>• Settlement</li> <li>• \$450k penalty</li> <li>• Disgorge profits</li> </ul>
<u>2021-009</u>	2022*	<ul style="list-style-type: none"> <li>• Individual conducted pre-hedging per above case</li> <li>• Settlement</li> <li>• \$50k fine</li> <li>• <b>Two-week ban</b></li> </ul>
<u>2021-031</u>	2022*	<ul style="list-style-type: none"> <li>• Entity failed to affix authorised trader identifications – Tag 116 on multiple orders</li> <li>• Summary fine</li> <li>• \$5k</li> </ul>
<u>2021-030</u>	2022*	<ul style="list-style-type: none"> <li>• Entity entered block trades below minimum quantity requirement</li> <li>• Summary fine</li> <li>• \$10k</li> </ul>

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Ref	Year	Summary
<u>2021-030</u>	2022*	<ul style="list-style-type: none"> <li>• Entity entered block trades below minimum quantity requirement</li> <li>• Summary fine</li> <li>• \$10k</li> </ul>
<u>2020-038</u>	2022*	<ul style="list-style-type: none"> <li>• Traders entered orders on behalf of two entities with common ownership</li> <li>• Executed a wash trade between one another</li> <li>• Settlement</li> <li>• \$25k</li> </ul>
<u>2021-012</u>	2022*	<ul style="list-style-type: none"> <li>• Entity reported inaccurate large reporting positions on multiple dates</li> <li>• Failed to supervise</li> <li>• Settlement</li> <li>• \$90k</li> </ul>
<u>2021-008</u>	2022*	<ul style="list-style-type: none"> <li>• Entity failed to ensure proper weight notes or weights were registered on exchange's commodity operations system</li> <li>• Prevented timely weighing of cocoa</li> <li>• Parties had to use an alternative delivery process</li> <li>• Settlement</li> <li>• \$25k</li> </ul>
<u>2021-011</u>	2022*	<ul style="list-style-type: none"> <li>• Firm accidentally established cotton positions more than all month limit</li> <li>• Cotton</li> <li>• Failure to supervise</li> <li>• Settlement</li> <li>• \$50k</li> <li>• Disgorge \$28,895</li> </ul>
<u>2021-006</u>	2022*	<ul style="list-style-type: none"> <li>• Individual placed several orders to test what order sizes would prompt other market participants to act</li> <li>• Coffee, cocoa, cotton, sugar</li> <li>• No customer harm</li> <li>• Settlement</li> <li>• \$20k</li> <li>• <b>5-day ban ICE US</b></li> </ul>
<u>2020-006</u>	2022*	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type behaviour</li> <li>• Cocoa and coffee futures</li> <li>• Failed to appear in response to summons</li> <li>• <b>Permanent ban ICE US</b></li> </ul>
<u>2020-010</u>	2022*	<ul style="list-style-type: none"> <li>• Entity / individual engaged in layering and spoofing type behaviour</li> <li>• Coffee futures</li> <li>• Both failed to appear in response to summons</li> <li>• Failure to supervise</li> </ul>

Appendix F

Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Failure to assign unique trade ID</li> <li>• <b>Permanent ban ICE US – both parties</b></li> </ul>
<u>2020-024</u>	2022*	<ul style="list-style-type: none"> <li>• Individual engaged in layering and spoofing type behaviour</li> <li>• Cotton futures</li> <li>• Failed to appear in response to summons</li> <li>• <b>Permanent ban ICE US</b></li> </ul>
<u>2021-007</u>	2022*	<ul style="list-style-type: none"> <li>• Two traders at entity entered de minimis orders</li> <li>• Off market prices</li> <li>• Purpose of testing product parameters and price caps</li> <li>• Not bona fide</li> <li>• Settlement</li> <li>• \$15k</li> </ul>
<u>2021-017</u>	2022*	<ul style="list-style-type: none"> <li>• Individual executed pre-arranged trades</li> <li>• Cotton No 2</li> <li>• Account owned by himself and another individual</li> <li>• Purpose of transferring equity</li> <li>• Settlement</li> <li>• <b>Permanent ban – ICE US</b></li> </ul>
<u>2021-017</u>	2022*	<ul style="list-style-type: none"> <li>• Individual executed pre-arranged trades</li> <li>• Cotton No 2</li> <li>• Account owned by himself and another individual</li> <li>• Purpose of transferring equity</li> <li>• Failed to substantively respond to requests for information</li> <li>• Settlement</li> <li>• <b>Permanent ban – ICE US</b></li> </ul>
<u>2021-016</u>	2022*	<ul style="list-style-type: none"> <li>• Firm failed to satisfy private negotiation requirements for block trades on numerous occasions</li> <li>• Failed to record all/some oral / written communications around such trades</li> <li>• Misreported execution times</li> <li>• Submitted outside 15-minute window</li> <li>• Failure to supervise</li> <li>• Settlement</li> <li>• \$80k</li> </ul>
<u>2021-001</u>	2022*	<ul style="list-style-type: none"> <li>• Entity entered accommodation block trade to correct previous block trades that were executed in error</li> <li>• Settlement</li> <li>• \$7.5k</li> </ul>
<u>2021-001</u>	2022*	<ul style="list-style-type: none"> <li>• Entity entered accommodation block trade to correct previous block trades that were executed in error</li> <li>• Settlement</li> <li>• \$7.5k</li> </ul>

Appendix F

Ref	Year	Summary
<u>2021-001</u>	2022*	<ul style="list-style-type: none"> <li>Employee of entity entered accommodation block trades to correct previous block trades that were executed in error</li> <li>Failed to keep recordings of oral communications</li> <li>Settlement</li> <li>\$15k</li> </ul>
<u>2021-015</u>	2022*	<ul style="list-style-type: none"> <li>Employee of bank facilitated wash trades by failing to enquire about ownership of the orders</li> <li>Settlement</li> <li>\$7.5k</li> </ul>
<u>2021-007</u>	2022*	<ul style="list-style-type: none"> <li>Individual engaged in layering and spoofing type behaviour for a sustained period</li> <li>Settlement</li> <li>\$5k</li> <li><b>12-week ban</b></li> </ul>
<u>2021-007</u>	2022*	<ul style="list-style-type: none"> <li>Entity's employee engaged in layering and spoofing type behaviour for a sustained period</li> <li>Settlement</li> <li>\$12.5k</li> </ul>

<b>Total penalties 2022</b>	<ul style="list-style-type: none"> <li>5,105,000</li> </ul>
Total volumes 31/12/22	<ul style="list-style-type: none"> <li>390,489,984</li> </ul>
Post-tax profit 31/12/22	<ul style="list-style-type: none"> <li>Not published separately</li> </ul>
2022 themes	<ul style="list-style-type: none"> <li>Physical breach (x1), recordkeeping breach (x7), position limit breach (x3), failure to use correct order type / to observe order crossing rules or entered price outside limit (x2), failure to expose for 5 seconds (x1), block trade violations (x11), inaccurate reporting, e.g. open interest or daily positions (x3), improper personal account dealing, pre-hedging or front running (x5), failure to supervise or have procedures (x8), wash or accommodation trades, self matches or pre-arranged trading (x5), layering and spoofing, manipulative deceptive trading or entering orders without intent to trade / to test market depth (x9), failure to appear (x2), sharing unique IDs / ID allocation errors (x3), failure to pay penalty (x1)</li> </ul>

Appendix F

**ICE Futures US - REC 2.15.3**

<b>Factors</b>	<b>Occasions</b>
Take appropriate disciplinary action against members in breach of its rules (and settlement arrangements, where appropriate):	126
Suspend (a member's) access to its facilities:	47
Refer members' or others' conduct to other appropriate authorities for possible action or further investigation:	Unknown
Where appropriate, enforce its rules (and settlement arrangements, where appropriate) against users (other than members) of its facilities:	175
Act against suppliers of services to members (for example, warehouses) whose performance or conduct may be critical to ensuring compliance with its rules (and settlement arrangements, where appropriate):	0

<b>Issue type</b>	<b>Count</b>
Warehousing, grading issues or physical related breach	2
Non-compliance with block trading rules	50
Non-compliance with rules governing EFS or EFP	10
Non-compliance with rules governing annual returns or attestations	1
Inadequate trade surveillance systems and controls	0
Position limit related breach	29
Reckless or disorderly trading	1
Position transfer breach	2
Layering and spoofing type behaviour and other deceptive practices including entering orders without intent to trade	44
Prearranged trading	0
Timely close out failure	0
Failure to take delivery or deliver	0
Large trader reporting, open interest, or position reporting failure / breach	33
Failure to setup registry trust account	0
Retrospective submission of orders	0

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Issue type	Count
Failure to use taped line	0
Front running, pre-hedging and improper personal account dealing	16
Failure to settle options by deadline	0
Cross trade matching failure / enter trade outside limit	14
Order feed issue	0
Record keeping breach	64
Failure to expose for 5 seconds	4
Failure to use unique IDs or sharing them	15
Failure to comply with exemption terms	2
Failure to exercise due diligence	1
ATS malfunction / improper oversight	11
Failure to supervise or have proper procedures	37
Wash / accommodation trades	32
Failure to appear or answer	10
Disclosure of customer ID without consent	5
Fictitious or inequitable trades	1
Failure to pay penalty	5
Booking trades at off market rates	1

## Appendix G: Summary of LME disciplinary notices

Note: these are summaries and excerpts from actual enforcement notices, tabulated for analysis.

Ref	Year	Summary
07/017	2007	<ul style="list-style-type: none"> <li>• Dealer mislead LME Quotations Committee</li> <li>• £1k fine</li> <li>• 40 points</li> </ul>
07/018	2007	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £250 fine</li> <li>• 20 points</li> </ul>
07/060	2007	<ul style="list-style-type: none"> <li>• Four dealers standing in Ring</li> <li>• 4 x £250 fine</li> <li>• 4 x 20 points</li> </ul>
07/087	2007	<ul style="list-style-type: none"> <li>• Dealer mislead LME Quotations Committee</li> <li>• £250 fine</li> <li>• 20 points</li> </ul>
07/088	2007	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £250 fine</li> <li>• 20 points</li> </ul>
07/119	2007	<ul style="list-style-type: none"> <li>• Dealer or clerk running across the Ring</li> <li>• £250 fine</li> <li>• 20 points</li> </ul>
07/123	2007	<ul style="list-style-type: none"> <li>• Provocative behaviour and/or violent conduct</li> <li>• £3k fine</li> <li>• <b>8-day suspension</b></li> </ul>
07/124	2007	<ul style="list-style-type: none"> <li>• Provocative behaviour and/or violent conduct</li> <li>• £1k fine</li> </ul>
07/160	2007	<ul style="list-style-type: none"> <li>• Dealer bidding / offering out of line with prevailing market prices</li> <li>• 2 people fined £250 each</li> <li>• 20 points</li> </ul>
07/235	2007	<ul style="list-style-type: none"> <li>• Dealer standing in Ring</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
07/260	2007	<ul style="list-style-type: none"> <li>• Failure to adhere to lending rules</li> <li>• 80k fine reduced from 100k</li> </ul>

## Appendix G

Ref	Year	Summary
07/359	2007	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
<b>Total penalties 2007</b>	<b>Total penalties 2007</b>	<ul style="list-style-type: none"> <li>• £89.5k</li> </ul>
Total volumes 31/12/07	Total volumes 31/12/07	Unknown
Post-tax profit 31/12/07	Post-tax profit 31/12/07	4,029,000
2007 themes	2007 themes	<ul style="list-style-type: none"> <li>• Misleading quotations committee (x2), violent conduct (x2), standing in the ring (x2), not adhering to lending rules (x1), running across Ring (x1), bidding out of line etc (x4)</li> </ul>
08/022	2008	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
08/033	2008	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
08/067	2008	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
08/068	2008	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
08/069	2008	<ul style="list-style-type: none"> <li>• Dealer standing in Ring</li> <li>• £1.25k fine</li> </ul>



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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• 20 points</li> </ul>
08/127	2008	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
08/137	2008	<ul style="list-style-type: none"> <li>• Dealer standing in Ring</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
08/167	2008	<ul style="list-style-type: none"> <li>• Breach of Ring food and beverages and/or identity pass codes</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
08/208	2008	<ul style="list-style-type: none"> <li>• Breach of dress code</li> <li>• £500 fine</li> <li>• 20 points</li> </ul>
08/212	2008	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
08/217	2008	<ul style="list-style-type: none"> <li>• Breach of Ring food and beverages and/or identity pass codes</li> <li>• 2 x £250 fine</li> <li>• 2 x 20 points</li> </ul>
08/220	2008	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
08/222	2008	<ul style="list-style-type: none"> <li>• Dealer standing in Ring</li> <li>• 2 x £1250 fine</li> <li>• 20 points</li> </ul>
08/250	2008	<ul style="list-style-type: none"> <li>• Dealer standing in Ring</li> <li>• £1250 fine</li> <li>• 20 points</li> </ul>
08/255	2008	<ul style="list-style-type: none"> <li>• Dealer standing in Ring</li> <li>• £1250 fine</li> <li>• 20 points</li> </ul>
08/307	2008	<ul style="list-style-type: none"> <li>• Breach of dress code</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• 5 x £250 fine</li> <li>• 5 x 20 points</li> </ul>
08/328	2008	<ul style="list-style-type: none"> <li>• Dealer bidding / offering out of line with prevailing market prices</li> <li>• 2.5k fine</li> <li>• 40 points</li> </ul>
<b>Total penalties 2008</b>	<b>Total penalties 2008</b>	<ul style="list-style-type: none"> <li>• £22,250</li> </ul>
Total volumes 31/12/08	Total volumes 31/12/08	Unknown
Post-tax profit 31/12/08	Post-tax profit 31/12/08	10,252,000
2008 themes	2008 themes	<ul style="list-style-type: none"> <li>• Standing in Ring (x5), dealing out of line prevailing prices etc (x8), breach of dress code (x2), breach of food/beverages or identity pass (x2)</li> </ul>
09/001	2009	<ul style="list-style-type: none"> <li>• Failure to adhere to lending rules</li> <li>• £150k settlement</li> </ul>
09/268	2009	<ul style="list-style-type: none"> <li>• Breach of Ring food and beverages and/or identity pass codes</li> <li>• £500 fine</li> <li>• 20 points</li> </ul>
09/337	2009	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
09/359	2009	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 40 points</li> </ul>
09/360	2009	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
09/390	2009	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available;</li> </ul>

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Ref	Year	Summary
		<p>and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</p> <ul style="list-style-type: none"> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
09/401	2009	<ul style="list-style-type: none"> <li>• Trading whilst standing behind the Ring whilst no dealers in Ring</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
09/445	2009	<ul style="list-style-type: none"> <li>• Dealer pre-matched deal at unknown price</li> <li>• 2 x 1.25k fine</li> <li>• 20 points</li> </ul>
09/452	2009	<ul style="list-style-type: none"> <li>• Dealer pre-matched deal at unknown price</li> <li>• 1 x 1.25k fine + 20 points</li> <li>• 40 points + <b>2 days' suspension</b></li> </ul>
09/474	2009	<ul style="list-style-type: none"> <li>• Dealer standing in Ring</li> <li>• 2x 1.25k fine + 20 points</li> </ul>
<b>Total penalties 2009</b>	<b>Total penalties 2009</b>	<ul style="list-style-type: none"> <li>• £164,250</li> </ul>
Total volumes 31/12/09	Total volumes 31/12/09	<b>Unavailable</b>
Post-tax profit 31/12/09	Post-tax profit 31/12/09	13,540,000
2009 themes	2009 themes	<ul style="list-style-type: none"> <li>• Pre-matching deals (x2), standing in the Ring (x1), standing behind Ring whilst no dealers in Ring (x1), dealing away from prevailing price etc (x4), breach of lending rules (x1), breach of food/beverages or identity pass (x1)</li> </ul>
10/006	2010	<ul style="list-style-type: none"> <li>• Dealer standing in Ring</li> <li>• 3 x £1.25k fine</li> <li>• 20 points</li> </ul>
10/018	2010	<ul style="list-style-type: none"> <li>• Dealer standing in Ring</li> <li>• £1250 fine</li> <li>• 20 points</li> </ul>
10/059	2010	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>

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Ref	Year	Summary
10/073	2010	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £5k fine</li> <li>• 80 points</li> <li>• <b>2-day suspension</b></li> </ul>
10/183	2010	<ul style="list-style-type: none"> <li>• Trading whilst standing</li> <li>• behind the Ring whilst no dealers in Ring</li> <li>• £2.5k fine, 40 points</li> </ul>
10/190	2010	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
10/201	2010	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
10/305	2010	<ul style="list-style-type: none"> <li>• Dealer standing in Ring</li> <li>• £2500 fine</li> <li>• 40 points</li> </ul>
10/309	2010	<ul style="list-style-type: none"> <li>• Trading whilst standing behind the Ring whilst no dealers in Ring</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
10/340	2010	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2500 fine</li> <li>• 40 points</li> </ul>
<b>Total penalties 2010</b>	<b>Total penalties 2010</b>	<ul style="list-style-type: none"> <li>• £22500</li> </ul>
Total volumes 31/12/10	Total volumes 31/12/10	Unknown

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Ref	Year	Summary
Post-tax profit 31/12/10	Post-tax profit 31/12/10	9,441,000
2010 themes	2010 themes	<ul style="list-style-type: none"> <li>• Dealing out of line prevailing market price etc (x5), standing in the Ring (x3), traders standing behind Ring whilst no traders in it (x2)</li> </ul>
11/001	2011	<ul style="list-style-type: none"> <li>• Dealer standing in the Ring</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
11/006	2011	<ul style="list-style-type: none"> <li>• Dealer standing in the Ring</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
11/094	2011	<ul style="list-style-type: none"> <li>• Dealer bidding / offering out of line with prevailing market prices</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
11/130	2011	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
11/158	2011	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 40 points</li> <li>• <b>2-day suspension</b></li> </ul>
11/162	2011	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
11/198	2011	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
11/199	2011	<ul style="list-style-type: none"> <li>• Throwing projectile</li> <li>• £1k fine</li> <li>• 20 points</li> </ul>

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Ref	Year	Summary
11/217	2011	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
11/256	2011	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
11/370	2011	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
<b>Total penalties 2011</b>	<b>Total penalties 2011</b>	<ul style="list-style-type: none"> <li>• £14,750</li> </ul>
Total volumes 31/12/11	Total volumes 31/12/11	Unknown
Post-tax profit 31/12/11	Post-tax profit 31/12/11	7,667,000
2011 themes	2011 themes	<ul style="list-style-type: none"> <li>• Dealing out of line prevailing market price etc (x7), throwing projectile (x1), dealing below mandatory tonnage (x1), standing in the Ring (x2)</li> </ul>
12/025	2012	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
12/080	2012	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>

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Ref	Year	Summary
12/181	2012	<ul style="list-style-type: none"> <li>• Use of mobile telephone in dealing area</li> <li>• £500 fine</li> <li>• 20 points</li> </ul>
12/226	2012	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
12/255	2012	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
12/318	2012	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• Dealer standing in Ring</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
<b>Total penalties 2012</b>	<b>Total penalties 2012</b>	<ul style="list-style-type: none"> <li>• £6750</li> </ul>
Total volumes 31/12/12	Total volumes 31/12/12	Unknown
Post-tax profit 31/12/12	Post-tax profit 31/12/12	3,289,000
2012 themes	2012 themes	<ul style="list-style-type: none"> <li>• Dealing out of line with prevailing price etc (5), use of mobile phone (x1)</li> </ul>
13/087	2013	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
13/098	2013	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
13/119	2013	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
13/120	2013	<ul style="list-style-type: none"> <li>• Use of foul and abusive language, obscene gestures</li> <li>• £500 fine</li> <li>• 20 points</li> </ul>
13/121	2013	<ul style="list-style-type: none"> <li>• Use of foul and abusive language, obscene gestures</li> <li>• £500 fine</li> <li>• 20 points</li> </ul>
13/144	2013	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
13/183	2013	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 40 points</li> <li>• <b>2-day suspension</b></li> </ul>
13/354	2013	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
13/358	2013	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>



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Ref	Year	Summary
13/360	2013	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
<b>Total penalties 2013</b>	<b>Total penalties 2013</b>	<ul style="list-style-type: none"> <li>• £12,250</li> </ul>
Total volumes 31/12/13	Total volumes 31/12/13	Unknown
Post-tax profit 31/12/13	Post-tax profit 31/12/13	40,434,000
2013 themes	2013 themes	<ul style="list-style-type: none"> <li>• Dealing out of line with prevailing market prices (x8), foul and abusive language (x2)</li> </ul>
14/037	2014	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
14/048	2014	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
14/067	2014	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
14/122	2014	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
14/143	2014	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available;</li> </ul>

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Ref	Year	Summary
		<p>and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</p> <ul style="list-style-type: none"> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
14/144	2014	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
14/178	2014	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
14/184	2014	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
14/205	2014	<ul style="list-style-type: none"> <li>• Dealer engaged in behaviour that was intentionally or unintentionally disorderly</li> <li>• Running outside of Ring trying to pre-match business</li> <li>• Traded significant volume without stating price for carry</li> <li>• Disorderly because unclear prices contango or backwardation</li> <li>• Dealer activity not used for purposes of validation</li> <li>• Skill, care, and due diligence</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
14/219	2014	<ul style="list-style-type: none"> <li>• Nine dealers standing in Ring</li> <li>• 7 x £1250 fine</li> <li>• 7 x 20 points</li> <li>• 2 x £2.5k fine</li> <li>• 2 x 40 points</li> <li>• <b>1 x two business days' suspension for accumulating 60 points within 3 months</b></li> </ul>
14/218	2014	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 40 points</li> </ul>

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Ref	Year	Summary
14/246	2014	<ul style="list-style-type: none"> <li>• Two dealer pre-matched a lead deal at unknown price across the Ring</li> <li>• Dealers must not bid or offer at a price which is unknown at the time the bid or offer is made</li> <li>• 2 x £1,250 fine</li> <li>• 2 x 20 points</li> </ul>
14/274	2014	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £2.5k fine</li> <li>• 40 points</li> </ul>
14/293	2014	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
14/316	2014	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
14/376	2014	<ul style="list-style-type: none"> <li>• Damage to exchange property</li> <li>• £500 fine</li> <li>• 20 points</li> </ul>
14/377	2014	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £1.25k fine</li> <li>• 20 points</li> </ul>
<b>Total penalties 2014</b>	<b>Total penalties 2014</b>	<ul style="list-style-type: none"> <li>• £38,000</li> </ul>
Total volumes 31/12/14	Total volumes 31/12/14	Unknown
Post-tax profit 31/12/14	Post-tax profit 31/12/14	41,825,000
2014 themes	2014 themes	<ul style="list-style-type: none"> <li>• Dealing below mandatory tonnage (x6), damaging exchange property (x1), dealing out of line prevailing market price etc (x7), standing in Ring (x1), unintentionally disorderly behaviour (x1)</li> </ul>
15/006	2015	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available;</li> </ul>

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Ref	Year	Summary
		<p>and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</p> <ul style="list-style-type: none"> <li>• £2.5k fine</li> <li>• 40 points</li> </ul>
15/038	2015	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
15/039	2015	<ul style="list-style-type: none"> <li>• Use of mobile phone in or behind Ring</li> <li>• 2 x £500 fine</li> <li>• 1 x 20 points</li> <li>• 1 x 40 points</li> </ul>
15/043	2015	<ul style="list-style-type: none"> <li>• Dealer pre-matched deal at unknown price</li> <li>• 2 x £2.5k fine</li> <li>• 20 points;</li> </ul>
15/074	2015	<ul style="list-style-type: none"> <li>• Dealer bidding / offering out of line with prevailing market prices</li> <li>• £5k fine</li> <li>• 40 points</li> </ul>
15/170	2015	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
15/218	2015	<ul style="list-style-type: none"> <li>• Dealer bidding / offering out of line with prevailing market prices</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
15/221	2015	<ul style="list-style-type: none"> <li>• Dealer bid at erroneous cash prices unreflective of prevailing market rate</li> <li>• Caused disruption and confusion in the Ring</li> <li>• £5k fine</li> <li>• 40 points for second offence in six months</li> </ul>
15/256	2015	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
15/348	2015	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £2.5k fine</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• 20 points</li> </ul>
<b>Total penalties 2015</b>	<b>Total penalties 2015</b>	<ul style="list-style-type: none"> <li>• £31,000</li> </ul>
Total volumes 31/12/15	Total volumes 31/12/15	<ul style="list-style-type: none"> <li>• 169.557.846</li> </ul>
Post-tax profit 31/12/15	Post-tax profit 31/12/15	108,571,000
2015 themes	2015 themes	<ul style="list-style-type: none"> <li>• Dealing below mandatory tonnage (x3), dealing out of line with prevailing market price etc (x5), pre-matched deals (x1), use of mobile phone (x1)</li> </ul>
16/104	2016	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
16/139	2016	<ul style="list-style-type: none"> <li>• Dealer pre-matched deal at unknown price</li> <li>• 2 x 2.5k fine</li> <li>• 2 x 20 points</li> </ul>
16/232	2016	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
16/270	2016	<ul style="list-style-type: none"> <li>• Warehouse entity fined</li> <li>• Breaches of warehousing agreement and terms / conditions</li> <li>• Structuring, negotiating, undertaking transactions</li> <li>• Inappropriate inducements</li> <li>• Two years</li> <li>• Adverse publicity and scrutiny – LME</li> <li>• LME not informed prior to transaction</li> <li>• Impacted ability of LME to effectively perform function</li> <li>• Settlement</li> <li>• £7.64 million</li> </ul>
16/311	2016	<ul style="list-style-type: none"> <li>• Excess orders generated by members' own algorithms and errors</li> <li>• 80k</li> </ul>
16/305	2016	<ul style="list-style-type: none"> <li>• Warehouse entity fined</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Breaches of warehousing agreement and terms / conditions</li> <li>• Erroneous instruction re: warrant issues</li> <li>• Notified exchange of errors three months after discovery</li> <li>• Engaged independent auditor to help make enhancements</li> <li>• Settlement</li> <li>• £30k</li> <li>• Pay the costs of the LME's audit</li> </ul>
16/324	2016	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
16/326	2016	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
16/353	2016	<ul style="list-style-type: none"> <li>• Use of mobile phone in or behind Ring</li> <li>• £250</li> <li>• 20 points</li> </ul>
16/402	2016	<ul style="list-style-type: none"> <li>• Use of mobile phone in or behind Ring</li> <li>• £250</li> <li>• 20 points</li> </ul>
<b>Total penalties 2016</b>	<b>Total penalties 2016</b>	<ul style="list-style-type: none"> <li>• £7,765,500</li> </ul>
Total volumes 31/12/16	Total volumes 31/12/16	<ul style="list-style-type: none"> <li>• 156.512.730</li> </ul>
Post-tax profit 31/12/16	Post-tax profit 31/12/16	82,476,000
2016 themes	2016 themes	<ul style="list-style-type: none"> <li>• Using mobile phone (x2), warehouse failures (x2), not dealing at prevailing price et.al. (x4), pre-matching trades (x1), algorithmic malfunction (x1)</li> </ul>
17/053	2017	<ul style="list-style-type: none"> <li>• Errors in the daily reporting of positions</li> <li>• Reprimand on file for 12 months</li> </ul>
17/061	2017	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available;</li> </ul>

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Ref	Year	Summary
		and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price <ul style="list-style-type: none"> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
17/095	2017	<ul style="list-style-type: none"> <li>• Dealer bidding / offering out of line with prevailing market prices</li> <li>• £5k fine</li> <li>• 40 points</li> <li>• <b>Two-day suspension</b></li> </ul>
17/099	2017	<ul style="list-style-type: none"> <li>• Errors in the daily reporting of positions</li> <li>• £5k fine</li> </ul>
17/107	2017	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £5k fine</li> <li>• 40 points</li> </ul>
17/111	2017	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
17/140	2017	<ul style="list-style-type: none"> <li>• Dealer buying, selling, or lending below mandatory tonnage</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
17/187	2017	<ul style="list-style-type: none"> <li>• Errors / failures in reporting of option volatilities</li> <li>• £2k</li> </ul>
17/242	2017	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
17/320	2017	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
<b>Total penalties 2017</b>	<b>Total penalties 2017</b>	<ul style="list-style-type: none"> <li>• £29,500</li> </ul>

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Ref	Year	Summary
Total volumes 31/12/17	Total volumes 31/12/17	<ul style="list-style-type: none"> <li>157.369.044</li> </ul>
Post-tax profit 31/12/17	Post-tax profit 31/12/17	88,429,000
2017 themes	2017 themes	<ul style="list-style-type: none"> <li>Not dealing at prevailing prices etc (x4), DPRS and option volatilities reporting failures (x3), dealing below mandatory tonnage (x3)</li> </ul>
18/023	2018	<ul style="list-style-type: none"> <li>Errors in the daily reporting of positions</li> <li>Five days in one month</li> <li>Settlement</li> <li>£1k</li> <li>Undertaking to improve systems and controls</li> </ul>
18/112	2018	<ul style="list-style-type: none"> <li>Errors in the daily reporting of positions</li> <li>Seven days in one month</li> <li>Failure to notify the LME of financing arrangement in place between January and March</li> <li>Member over reported position</li> <li>Uncovered during member audit programme</li> <li>LME precious failure to allocate one lot buy to offset existing short position</li> <li>Settlement</li> <li>£40k penalty</li> <li>Undertaking to improve systems and controls</li> </ul>
18/131	2018	<ul style="list-style-type: none"> <li>Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>£2.5k fine</li> <li>20 points</li> </ul>
18/132	2018	<ul style="list-style-type: none"> <li>Dealer buying, selling, or lending below mandatory tonnage</li> <li>£2.5k fine</li> <li>20 points</li> </ul>
18/154	2018	<ul style="list-style-type: none"> <li>Warehouse entity fined</li> <li>Breaches of warehousing agreement and terms / conditions</li> <li>Failure to deliver out minimum load out 1.5mt p/d for warrant holder's cancellations of cathodes</li> <li>Led to deliveries being delayed</li> <li>Inadequate resourcing</li> <li>Failure to open all access points</li> </ul>



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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Settlement</li> <li>• \$100k (£75,339.2)</li> </ul>
18/156	2018	<ul style="list-style-type: none"> <li>• Automatic rent penalty imposed</li> <li>• Delivery of warrants not endorsed as “rent paid”</li> <li>• £10,600</li> </ul>
18/157	2018	<ul style="list-style-type: none"> <li>• Automatic rent penalty imposed</li> <li>• Delivery of warrants not endorsed as “rent paid”</li> <li>• £500</li> </ul>
18/169	2018	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £5k fine</li> <li>• 20 points</li> </ul>
18/205	2018	<ul style="list-style-type: none"> <li>• Use of foul and abusive language, obscene gestures</li> <li>• £500 fine</li> <li>• 20 points</li> </ul>
18/219	2018	<ul style="list-style-type: none"> <li>• Dealer misleading LME Quotations Committee</li> <li>• £20k fine</li> <li>• 20 points</li> </ul>
18/254	2018	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
<b>Total penalties 2018</b>	<b>Total penalties 2018</b>	<ul style="list-style-type: none"> <li>• £160,439.2</li> </ul>
Total volumes 31/12/18	Total volumes 31/12/18	<ul style="list-style-type: none"> <li>• 184.816.059</li> </ul>
Post-tax profit 31/12/18	Post-tax profit 31/12/18	80,440,000
2018 themes	2018 themes	<ul style="list-style-type: none"> <li>• Rent penalties (x2), not bidding at prevailing price etc (x3), foul and abusive language (x1), misleading Quotations Committee (x1), warehouse failures (x1), buying or selling below tonnage (x1), DPRS failures (x2)</li> </ul>
19/141	2019	<ul style="list-style-type: none"> <li>• Ring dealer opened cash market for Ring 2 Zinc at an erroneous offer not reflective of prevailing market prices</li> <li>• Lack of skill, care, and due diligence in open outcry</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• Caused disruption and confusion in the Ring</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
19/179	2019	<ul style="list-style-type: none"> <li>• Dealer bidding / offering at lower, at, or more than offered price; and/or not buying total lots available; and/or not selling to dealer with priority; making a fictitious offer away from prevailing market price</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
19/266	2019	<ul style="list-style-type: none"> <li>• Failure to put in place adequate systems and controls to detect, deter and deal with market abuse</li> <li>• Settlement</li> <li>• £210k</li> </ul>
19/249	2019	<ul style="list-style-type: none"> <li>• Failure to put in place adequate systems and controls to detect, deter and deal with market abuse</li> <li>• Settlement</li> <li>• £180k</li> </ul>
19/367	2019	<ul style="list-style-type: none"> <li>• Dealer said “yes” but failed to trade additional lots mandated by exchange regulation</li> <li>• Trading activity not completed in an orderly or timely manner</li> <li>• Disruption to others in the Ring</li> <li>• Three unsatisfied buyers</li> <li>• £2.5k fine</li> <li>• 20 points</li> </ul>
<b>Total penalties 2019</b>	<b>Total penalties 2019</b>	<ul style="list-style-type: none"> <li>• £397,500</li> </ul>
Total volumes 31/12/19	Total volumes 31/12/19	<ul style="list-style-type: none"> <li>• 176.231.369</li> </ul>
Post-tax profit 31/12/19	Post-tax profit 31/12/19	77,148,000
2019 themes	2019 themes	<ul style="list-style-type: none"> <li>• Not dealing at prevailing market prices et.al. (x2), disruptive trading (x1), Failure to put in place adequate systems and controls to detect, deter and deal with market abuse (x2)</li> </ul>
20/071	2020	<ul style="list-style-type: none"> <li>• Business processing failure</li> <li>• £2k fine</li> </ul>
20/070	2020	<ul style="list-style-type: none"> <li>• Business processing failure</li> <li>• £2k fine</li> </ul>
<b>Total penalties 2020</b>	<b>Total penalties 2020</b>	<ul style="list-style-type: none"> <li>• £4,000</li> </ul>

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Ref	Year	Summary
Total volumes 31/12/20	Total volumes 31/12/20	<ul style="list-style-type: none"> <li>• 154.915.215</li> </ul>
Post-tax profit 31/12/20	Post-tax profit 31/12/20	77,298,000
2020 themes	2020 themes	<ul style="list-style-type: none"> <li>• Business processing failures (x2)</li> </ul>
21/021	2021	<ul style="list-style-type: none"> <li>• Errors in the daily reporting of positions</li> <li>• £2k fine</li> </ul>
21/030	2021	<ul style="list-style-type: none"> <li>• Errors in the daily reporting of positions</li> <li>• £1k fine</li> </ul>
21/031	2021	<ul style="list-style-type: none"> <li>• Errors in the daily reporting of positions</li> <li>• £1k fine</li> </ul>
<b>Total penalties 2021</b>	<b>Total penalties 2021</b>	<ul style="list-style-type: none"> <li>• £5,000</li> </ul>
Total volumes 31/12/21	Total volumes 31/12/21	<ul style="list-style-type: none"> <li>• 145.037.570</li> </ul>
Post-tax profit 31/12/21	Post-tax profit 31/12/21	76,451,000
2021 themes	2021 themes	<ul style="list-style-type: none"> <li>• DPRS failures (x3)</li> </ul>
22/133	2022	<ul style="list-style-type: none"> <li>• Automatic rent penalty imposed</li> <li>• Delivery of warrants not endorsed as “rent paid”</li> <li>• £950</li> </ul>
22/132	2022	<ul style="list-style-type: none"> <li>• Automatic rent penalty imposed</li> <li>• Delivery of warrants not endorsed as “rent paid”</li> <li>• £850</li> </ul>
22/152	2022	<ul style="list-style-type: none"> <li>• Member submitted its daily position reporting files in an accurate and timely manner on six days in January 2021</li> <li>• Significant number of inaccurate commodity position reports</li> <li>• Over-reliance on vendors to generate the reports</li> <li>• Inadequate systems and control environment</li> <li>• Systems only related to delivery of file rather than content of submission</li> <li>• Inappropriate escalation procedures for identification and management of reporting errors</li> <li>• Firm open and cooperative</li> <li>• Series of changes to systems and controls</li> <li>• Settlement</li> </ul>

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Ref	Year	Summary
		<ul style="list-style-type: none"> <li>• £5k penalty DPRS failures</li> <li>• £50k penalty commodity position report failures</li> </ul>
22/175	2022	<ul style="list-style-type: none"> <li>• LME identified suspicious order book activity</li> <li>• Routed to client through direct electronic access between 8<sup>th</sup> August – 12 September 2018</li> <li>• Member failed to organise and control internal affairs effectively to detect, deter, and deal with potential instances of market abuse conducted by clients via DEA                             <ul style="list-style-type: none"> <li>○ Inadequate written policies and procedures to implement and review alert calibrations</li> <li>○ Failed to have inadequate risk assessment arrangements in place to identify and assess market abuse risks</li> <li>○ Inadequate policies and procedures regarding identification and investigation of potential instances of suspected market abuse</li> <li>○ Failed to adequately train staff about identification and investigation of suspected market abuse</li> </ul> </li> <li>• Member had taken steps to implement control improvements and had replaced its surveillance system</li> <li>• Settlement</li> <li>• £175k</li> </ul>
<b>Total penalties 2022</b>	<b>Total penalties 2022</b>	<ul style="list-style-type: none"> <li>• £231,800</li> </ul>
Total volumes 31/12/22	Total volumes 31/12/22	<ul style="list-style-type: none"> <li>• 134.154.077</li> </ul>
Post-tax profit 31/12/22	Post-tax profit 31/12/22	<ul style="list-style-type: none"> <li>• 56,068,000</li> </ul>
2022 themes	2022 themes	<ul style="list-style-type: none"> <li>• DEA surveillance control failures (x1), rent penalties (x2), DPRS and CPR failures (x1)</li> </ul>

Factors	Occasions
Take appropriate disciplinary action against members in breach of its rules (and settlement arrangements, where appropriate) (including floor teams):	144
Suspend a member's access to its facilities (any duration):	7
Refer members' or others' conduct to other appropriate authorities for possible action or further investigation:	Unknown

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<b>Factors</b>	<b>Occasions</b>
Where appropriate, enforce its rules (and settlement arrangements, where appropriate) against users (other than members) of its facilities:	0
Act against suppliers of services to members (for example, warehouses) whose performance or conduct may be critical to ensuring compliance with its rules (and settlement arrangements, where appropriate):	3

<b>Issue type</b>	<b>Count</b>
Warehousing or grading issues	5
Non-compliance with block trading rules	0
Non-compliance with rules governing EFS or EFP	0
Non-compliance with rules governing annual returns or attestations	0
Inadequate trade surveillance systems and controls	3
Position limit breach	0
Reckless or disorderly trading	1
Position transfer breach	0
Failure to supply information for MiFIR reporting	0
Layering and spoofing type behaviour	0
Prearranged trading	4
Misleading Quotations Committee	3
Violent conduct	2
Standing in the ring	14
Not adhering to lending rules	2
Bidding out of line with the market	65
Breach of dress code	2
Breach of food / beverages or identity pass requirements	3
Standing / dealing behind the Ring whilst no dealers in the Ring	3
Throwing projectile	1
Dealing below mandatory tonnage	14

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Issue type	Count
Using mobile telephone in the Ring	4
Foul and abusive language	3
Damaging exchange property	1
Algorithmic malfunction	1
DPRS and options volatilities reporting failures	7
Business processing failures	2

## Glossary of Terms

Accountability regime....Feature of SMCR which seeks to ensure that every senior manager is accountable for specific areas of a firm’s business.

Adverse selection .....Per Britannica Money (Alston, Undated): “a market process in which buyers or sellers of a product or service are able to use their private knowledge of the risk factors involved in the transaction to maximise their outcomes, at the expense of other parties to the transaction”.

Agency model.....The Forexpedia by BabyPips (Undated-c) offers a succinct definition: “The agency model, in the context of order execution, refers to a business model where a broker or intermediary acts solely as an agent on behalf of their clients, rather than trading as a principal or market maker.”

Agent-based modelling..Columbia University (Undated-d) states “Agent-based models are computer simulations used to study the interactions between people, things, places, and time.”

Algorithmic trading .....This thesis uses the definition in Article 4(1)(39) of MiFID II: “trading in financial instruments where a computer algorithm automatically determines individual parameters of orders such as whether to initiate the order, the timing, price or quantity of the order or how to manage the order after its submission, with limited or no human intervention, and does not include any system that is only used for the purpose of routing orders to one or more trading venues or for the processing of orders involving no determination of any trading parameters or for the confirmation of orders or the post-trade processing of executed transactions.”

Alternative Trading System            Per the SEC (Undated-e): “Alternative Trading Systems (ATs) are SEC-regulated electronic trading systems that match

## Glossary of Terms

orders for buyers and sellers of securities. An ATS is not a national securities exchange. However, an ATS may apply to the SEC to become a national securities exchange.”

Anthropocentric .....Defined by Oxford Languages (Kopnina et al., 2018) as: “regarding humankind as the central or most important element of existence.”

Application Programme Interface Defined by IBM (2020b) as: “a set of defined rules that enable different applications to communicate with one another.”

Arbitrage .....Definition from Oxford Languages (2023m): “the simultaneous buying and selling of securities, currency, or commodities in different markets or in derivative forms in order to take advantage of differing prices for the same asset.”

Arms race.....For the purposes of this thesis, aggressive competition between HFT firms that encourages innovations that seek to confer speed advantages on their proprietors.

Artificial intelligence .....Definition from Oxford Reference (Undated-h): “the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.”

Audit trail.....Investopedia (Hayes, 2022c): “Audit trails are used to verify and track many types of transactions, including accounting transactions and trades in brokerage accounts.”

Automation .....For the purposes of this thesis, using information technology to reduce or eliminate human involvement in trading processes.

Autoriteit Financiële Markten      The financial regulator of the Netherlands.

Back office .....For the purposes of this thesis, an informal term that typically refers to operational functions within an investment bank or brokerage firms including teams who deal with settlements,



## Glossary of Terms

order entry or matching, regulatory reporting, and treasury activities.

Banging the close .....A disruptive and/or manipulative trading practice where a person trades aggressively at the close of a market window or trading day, usually to try and influence the closing price.

Bank of England.....The UK's central bank.

Barrow boy .....Per Cambridge Dictionary : “in the past, a man or boy who sold fruit and vegetables, etc. from a barrow.”

Behavioural lens .....The use of behavioural science approaches to inform control or process design.

Behavioural science .....Defined in the Merriam-Webster (Undated-k) dictionary as a “branch of science...that deals primarily with human action and often seeks to generalise about human behaviour in society.”

Big Bang .....The “Big Bang” refers to reforms instigated by Prime Minister Margaret Thatcher's Government to liberalise access to the UK's securities markets in the 1980s.

Brexit Transition Period..Period agreed in the UK's agreement with the EU to withdraw from the EU to help facilitate an orderly Brexit. The Transition Period ended in the UK on 31<sup>st</sup> December 2020 at 23:00 GMT.

Broker .....A financial professional who transacts in financial instruments on behalf of another rather than for his own account.

Brokerage.....For the purposes of this thesis, a financial institution which transacts in financial instruments on behalf of others, i.e. its clients.

Broker-dealer .....According to Investopedia (Hayes, 2021), “a person or firm in the business of buying or selling securities for its own account or for its customers”.

Business continuity .....Arrangements put in place to ensure that business can continue in the event of a significant disruption, e.g. a cyber-attack.

## Glossary of Terms

- Business Source Premier** A business research database.
- Buy side.....**A taker of investment services, e.g. a hedge fund manager.
- Category 1 member .....**An alternative term for Ring Dealing Member of the LME.
- Central Limit Order Book** A system employed by trading venues to match buying and selling interests, typically in a manner visible to participants on an anonymised basis.
- Central Securities Depository** An entity that strives to ensure the orderly settlement of securities products.
- Certified Person.....**In the UK, a person who has been assessed as fit and proper by his or her firm to perform certain functions that could cause significant harm to that firm's customers or the firm itself.
- Change of control process** Due diligence process operated by a financial regulator to check the fitness and probity of a prospective acquirer of a regulated financial services firm.
- Chatham House Rules...**Per the Practical Law Glossary (Undated-n): "When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed. The purpose of the rule is to encourage open discussion since anything said is "off the record"."
- Chicago Board of Trade..**A US DCM that is part of the CME Group. The Chicago Board of Trade has a long history of facilitating trading in agricultural products but also lists financial futures.
- Chicago Mercantile Exchange** One of the world's largest conglomerates of trading venues, facilitating the trading of a broad range of products and asset classes through its constituent trading venues.
- Chief Risk Officer.....**The senior manager in a financial services organisation who is ultimately accountable for ensuring that its systems and

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controls to identify and mitigate various types of risk are effective.

Clearing.....A service offered by a special type of intermediary called a clearing house or a central counterparty which aims to reduce counterparty risk, i.e. one party to a transaction defaulting on their obligations to another. The clearing house does this by becoming “buyer to every seller and seller to every buyer”, traditionally through novation.

Clearing member.....Typically, a bank or brokerage that is a member of a clearing house (also known as a central counterparty) enabling it to clear derivatives transactions for itself or on behalf of its clients.

Coding .....For the purposes of this thesis, the programming or calibration of execution or trading algorithms using languages such as Python.

Co-location .....Service provided by some trading venues which allows an entity to place its servers in proximity those owned by the trading venue itself. This typically confers a speed advantage on those users of the venue that utilise the service.

Commodity .....A physical asset that serves as the underlying to a commodity derivative, e.g. copper, sugar or oil.

Commodity Exchange Inc. As US DCM that is part of the CME Group and facilitates the trading of commodity derivatives, particularly in base and precious metals.

Commodity Futures Trading Commission US Government agency created in 1974 to regulate US derivatives markets.

Companies House.....Registry for companies and other establishments operating from the UK.

Conduct risk.....A term not formally defined in financial legislation, but which typically refers to the risk of misconduct occurring which could

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result in harm to customers, other stakeholders including the wider financial system as well as to the firm itself.

Consumer Duty .....A legal obligation upon financial institutions in the UK to minimise the risk of foreseeable harm to consumers of financial products and services. Entered into force in July 2023.

Control function .....Defined in the FCA Handbook as: “a function (including, but not limited to, a risk management function, compliance function and internal audit function) that is independent from the business units it controls and that is responsible for providing an objective assessment of the firm’s risks, and for reviewing and reporting on those risks.”

COVID-19 .....Pandemic caused by a contagious respiratory disease.

Credit risk .....Risk that a debtor defaults.

Critical third party .....Per the Bank of England (2022e): “a failure in, or disruption to, the provision of the services that the it provides to firms and FMIIs (either individually or where more than one service is provided, taken together) could threaten the stability of, or confidence in, the financial system of the UK.”

C-suite .....Colloquialism referring to the executive management of a company, i.e. holders of key positions such as Chief Executive Officer and Chief Financial Officer.

Culture audit .....Per Connecteam (Ben Simhon, Undated): “A culture audit is a comprehensive evaluation of an organization’s values, beliefs, behaviours, and practices to understand the current workplace culture and identify areas for improvement.”

Dealing room .....Physical location in the office of a brokerage (or broker-dealer) where broking and trading activities take place.

Demutualisation .....Per Investopedia (Bloomenthal, 2021): “process by which a private, member-owned company, legally changes its structure

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in order to become a public-traded company owned by shareholders.”

Derivative .....Per Investopedia (Fernando, 2023): “a type of financial instrument whose value is dependent on an underlying asset, group of assets or benchmark.”

Designated Contract Market      Defined as (Undated-r): “exchanges that operate under the regulatory oversight of the CFTC, pursuant to Section 5 of the Commodity Exchange Act.”

Direct electronic access      Defined in the FCA Handbook (Undated-s) as “an arrangement where a member or participant or client of a trading venue permits a person to use its trading code so the person can electronically transmit orders relating to a financial instrument directly to the trading venue and includes arrangements which involve the use by a person of the infrastructure of the member or participant or client, or any connecting system provided by the member or participant or client, to transmit the orders (direct market access) and arrangements where such an infrastructure is not used by a person (sponsored access, “SA”).”

Direct market access.....Alternative term for “direct electronic access”.

Disintermediation.....Per Investopedia (Hayes, 2022a): “the process of cutting out the financial intermediary in a transaction”. For the purposes of this thesis, the “financial intermediary” is usually an investment firm which acts as a “brokerage” or “broker-dealer”.

Doctor of Business Administration      A higher degree that is equivalent to a PhD, but which emphasises the study of professional practice.

Doctor of Philosophy .....The most common form of doctoral degree awarded for a substantial piece of research that makes an original contribution to knowledge.

## Glossary of Terms

- Elite interview .....For the purposes of this thesis: a research interview conducted with a person employed in a professional capacity in the financial services industry.
- Epistemology.....The theory of knowledge, how it is derived and its limitations.
- E-platform.....Electronic platform used by market participants to trade on a trading venue.
- Equity market .....A trading venue that facilitates the trading of stocks.
- Ethnographic.....Qualitative research method involving the collection of data through observation, e.g. by a researcher sitting in a financial institution to see “what actually happens”.
- Eurex.....Refers to Eurex Frankfurt AG, a ROIE that facilitates trading in futures and options, particularly in stocks and indices.
- European Energy Exchange A trading venue specialising in energy and power contracts based in Leipzig, Germany.
- Exchange traded derivative A derivative that is traded on a trading venue.
- Execution only .....Typically refers to situations where a brokerage only executes its clients’ orders (or sends them to another financial services firm for execution, an activity known as “transmission”). In these situations, the brokerage does not take risk, i.e., it does not become counterparty to its client(s).
- Fast trader.....Colloquialism referring to a market participant who employs HFT techniques.
- FCA Code of Conduct....Applies to nearly all persons working in FCA regulated investment firms.
- FCA Register.....Per the FCA’s website (2016e), “lists all the firms and individuals that are involved with regulated activities.”
- Federal Financial Supervisory Authority German financial regulator. Most known by the abbreviation “BaFin”.

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- Feedback loop.....Defined by Investopedia (Ganti, 2022) as “a self-perpetuating pattern of investment behaviour where the end result reinforces the initial act.”
- Financial Conduct Authority      One of the UK’s financial regulators (together with the PRA) and the lead on supervising the conduct of retail and wholesale financial services firms.
- Financial Information Exchange    A protocol used by trading venues to transmit order and trading data.
- Financial Markets Standards Board      Formerly the FICC Markets Standards Board until it changed its name in 2022.
- Financial Services and Markets Act 2000    UK Act of Parliament that laid the foundations for the current UK regulatory system, creating the FSA as a single, unified regulator.
- Financial Services and Markets Bill (since 29<sup>th</sup> June 2023 the Financial Services and Markets Act)    An Act of Parliament designed to reform the regulation of the UK financial system to make it more competitive post Brexit.
- Financial Services Authority      Predecessor to the FCA. Was the UK’s financial regulator until April 2013.
- Financial Stability Board    A supranational body based in Basel, Switzerland (2020a), that “monitors and makes recommendations about the global financial system.”
- Financialization.....Defined by Palley (2007) as: “a process whereby financial markets, financial institutions and financial elites gain greater influence over economic policy and economic outcomes.” This has proved particularly controversial in the commodities markets where, historically, physical users of underlying products (e.g. corn, copper) had been more, or at least as, influential in price formation than financial institutions.

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Firm Contact Centre .....Section of the FCA that handles queries received from authorised firms.

First line of defence .....Typically refers to the ownership of risk primarily residing with a firm's business units that are involved in revenue generation. For example, a broker is likely to have more frequent interactions with customers than someone working in a firm's risk and compliance functions would. Therefore, the broker represents a firm's "first line of defence" in detecting risks posed by that customer, e.g. of misconduct or potential insolvency.

Fit and proper .....A test that a regulator or regulated financial institution is required to perform prior to appointing someone to certain roles (e.g. senior management or customer facing functions) to determine if that person is honest, competent, and reliable. In some jurisdictions firms are required to periodically reassess a person's fitness and propriety.

Fixed income .....Per Investopedia (Murphy, 2023): "A fixed-income security is an investment that provides a return through fixed periodic interest payments and the eventual return of principal at maturity."

Flash Crash .....A sudden price drop in a financial instrument triggered by large scale cancellation of orders, typically followed by a swift recovery during the same trading day. To date, the most famous incident of this nature occurred on 6<sup>th</sup> May 2010 when the Dow Jones Industrial Average dropped over 1,000 points in 10 minutes. Consequently, this event is often referred to as "the Flash Crash".

Flesch-Kincaid scale .....A test devised to gauge how easy it is to read a text written in the English language.



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- Forward.....Per Investopedia (Hayes, 2022b): “a customised contract between two parties to buy or sell an asset at a specified price on a future date.”
- Fragmented market .....This typically refers to a situation where the trading of a particular financial instrument (or instruments that are fungible) does not take place on one trading venue, but on many. A fragmented market potentially offers competitive benefits (e.g. competition between venues in the setting of fees to trade) but makes price formation more complex.
- Front office.....For the purposes of this thesis, the part(s) of a bank or investment firm which are engaged in revenue generating activities, e.g. broking and trading.
- Front running.....Typically, the process of a broker illegally trading ahead of a client’s orders. Sometimes also refers to trading ahead of publicly available signals where no fiduciary relationship exists between the parties involved.
- Fundamental analysis ...IG (Undated-u) provides the following definition: “Fundamental analysis is a method of evaluating the intrinsic value of an asset and analysing the factors that could influence its price in the future. This form of analysis is based on external events and influences, as well as financial statements and industry trends.”
- Future .....Per Investopedia (Agarwal, 2022): “Futures are standardised contracts traded on a centralised exchange. They are an agreement between two parties to buy or sell something at a future date for a certain price.”
- Futures Industry Association      A group that lobbies on behalf of banks and investment firms that transact on the derivatives markets.
- FX Global Code.....Per the Global Foreign Exchange Committee(2021e) “is a set of global principles of good practice in the foreign exchange

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market, developed to provide a common set of guidelines to promote the integrity and effective functioning of the wholesale foreign exchange market.”

German HFT Act .....See High Frequency Trading Act.

Gilt-Edged Market Maker Per the UK Debt Management Office: “is a primary dealer in gilts and actively trades in either conventional gilts, index-linked gilts or both.”

Globex.....The CME’s proprietary trading system

Google Scholar .....A research database operated by Google.

Hack Crash .....Incident occurring on 23<sup>rd</sup> April 2013 where the Associated Press’s Twitter feed had been hacked and a tweet posted that the White House had been attacked by terrorists, resulting in injuries to then President Barack Obama. This news caused a rapid but temporary decline in stock prices, particularly in the US.

Hedge fund.....A collective investment scheme open to private (usually high net worth and sophisticated) investors that utilises complex (and riskier) strategies and instruments to seek returns superior to those of more risk averse investment schemes.

Hein Online .....A legal research database.

Herding .....A scenario where many (usually retail or “uninformed”) investors copy each other’s trading signals, usually because of a fear of missing out or “FOMO”.

High frequency trading...Per Autoriteit Financiële Markten (2023) “a technique that allows for extremely fast signal processing and/or order execution”.

High Frequency Trading Act German statute setting systems and control expectations for the conduct of HFT.

Hochfrequenzhandelsgesetz German for High Frequency Trading Act.

## Glossary of Terms

- Hong Kong Exchange Group      One of the world's biggest groups of trading venues, based in Hong Kong. Owner of the LME since late 2012.
- HUMANS .....Practical test devised by behavioural scientist (Hunt, 2023) to enable practitioners to gauge whether their policy interventions are likely to achieve success in achieving compliance or altering behaviours among those at whom they are targeted.
- ICE Futures Europe.....A UK RIE that facilitates trading in derivative products, particularly in commodities but also in equities.
- ICE Futures U.S. ....A US DCM that facilitates trading in derivative products that are like that of ICE Futures Europe.
- Iceberg order .....An order type designed to limit the price impact of a large order on an exchange's CLOB by executing it gradually in small tranches.
- ICE Block.....A proprietary system developed by Intercontinental Exchange Inc. (incorporated ICE Futures Europe and ICE Futures U.S.) to enable members to submit the details of transactions that have been negotiated off-exchange. This system is typically for large-in-scale transactions which, if submitted to the exchange's CLOB for execution would cause a significant price move.
- Illiquid market .....A financial market in which there are few buyers or sellers for types of financial instrument.
- Independent Software Vendor      An information technology company that specialises in making software applications used by financial institutions in the front, middle and back office.
- Informed trader .....A colloquialism that typically refers to a professional trader in the financial markets who has access to the latest information that could have an impact on the price of a financial instrument.

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- Instant message broking A form of brokerage where a broker receives orders and confirms the details of any resultant executions over an instant message application such as Bloomberg Chat.
- Instrument .....Per the International Accounting Standards (Undated-x): “A contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.”
- Inter-dealer broker.....A broker who arranges and executes transactions between financial institutions.
- Inter-office market.....A venue of the LME where member firms arrange transactions amongst themselves.
- Inventory costs .....For the purposes of this thesis, the costs to a market participant of holding a physical commodity, e.g. paying rent to a warehouse to store the commodity.
- Investment bank.....A bank which primarily derives its revenues from activities in the capital markets (usually with wholesale participants) rather than deposit taking for retail customers.
- Investment firm .....A non-bank firm in the EU or UK that typically specialises in broking, trading or advising in/on investments.
- Investment Firms Prudential Regime A key regulation in the EU and UK which sets overall financial adequacy (capital and liquidity) expectations for investment firms.
- Investment service .....An all-encompassing term referring to a range professional services offered by financial services institutions to persons who wish to use the financial markets to hedge or speculate. Examples include the provision of advice, broking, fund management and research services.
- Kill functionality.....Defined in the FCA Handbook (2021a) as functionality which allows an investment firm “to cancel immediately, as an emergency measure, any or all of its unexecuted orders submitted to any or all trading venues to which the investment

## Glossary of Terms

firm is connected.... Unexecuted orders shall include those originating from individual traders, trading desks or, where applicable, clients.”

Kill switch .....Alternative term for “kill functionality”.

Know your customer .....The process of understanding a customer’s source of wealth, purposes of trading, reputation, political and other connections, and disciplinary history.

Large language model....An AI model that is capable of processing large amounts of data.

Last look.....Occurs when a liquidity provider quotes a price that is not “firm”. This means the liquidity provider has an opportunity to renege on the quote should it deem that market conditions have become unfavourable to its own interests.

Latency .....A period of delay between seeking to execute a transaction in a financial instrument and receiving confirmation that execution has been achieved.

Layering.....For the purposes of this thesis, a manipulative activity whereby a market participant places a series of small orders on a trading venue’s CLOB without an intention to execute them. These orders seek to entice others to interact with the CLOB, only to be cancelled before they can be executed.

Lexis Nexis .....A legal research database.

Liquid market .....A financial market where there is a high availability of buyers and sellers to interact with.

Liquidity flight.....The migration of buyers and sellers from one trading venue to another, usually because of more favourable trading conditions, better technology, or the availability of incentive schemes.

Liquidity provider.....A person who offers to buy and sell financial instruments to other market participants from their own account. Performs a

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similar role to a market maker, without the same commitment to continuously provide liquidity in times of market stress.

LME Select .....The LME's proprietary trading software that is use by its members to transact electronically on the exchange.

London Interbank Offered Rate A benchmark used in the financial markets to calculate borrowing costs. Is currently being phased out following the uncovering of a widespread rigging scandal in 2012.

London Metal Exchange A UK RIE that facilitates the trading of base and precious metals derivatives.

London Stock Exchange.A UK RIE that facilitates the trading of securities, i.e. stocks and bonds.

Low frequency trading ...A term for trading on financial markets without the use of high-speed algorithmic functionality.

Machine learning .....Computer algorithm that can learn from data and calibrate itself with limited human intervention.

Mangers-in-charge regime Hong Kong's accountability regime with similarities to SMCR in the UK.

Manipulative.....For the purposes of this thesis, an illegal or unethical activity that seeks to deceive, or gain advantage over, other market participants.

Manual algorithmic trading Trading using algorithms that are exclusively (re)calibrated by human brokers or traders rather than using machine learning.

Market abuse.....Behaviour that seeks to manipulate financial markets or misuse information, usually to gain an unfair advantage over other market participants.

Market Abuse Regulation Key piece of the legal framework in force in the EU and UK that prohibits market abuse and requires regulated financial service firms to report suspicions.

## Glossary of Terms

- Market maker .....Essentially a liquidity provider, albeit one that is committed, through agreement with a trading venue, to continuing to provide liquidity during volatile periods.
- Market participant .....A legal or natural person who transacts on the financial markets.
- Market risk.....Per Risk.net (Undated-ab): “the risk of losses on financial investments caused by adverse price movements.”
- Markets in Financial Instruments Directive      Landmark pieces of European legislation (MiFID I, replaced by MiFID II), also adopted by the UK whilst it was a member of the EU, that govern(ed) the conduct of business on, and structure of, financial markets.
- Merchant.....Alternative term for an investment banker or banking, usually used in the UK but now antiquated.
- Middle management.....For the purposes of this thesis, layer of management between senior management and front-line staff in any function of a financial institution.
- Middle office.....Part of a financial institution that provides information technology support and works to ensure that transactions have been executed and confirmed correctly.
- Misconduct .....Describes any form of bad behaviour, whether financial (e.g. market abuse) or non-financial (e.g. sexual harassment).
- Multilateral Trading Facility      A type of trading venue in the EU and UK that competes with “traditional” trading venues such as the LME and LSE by enabling multiple buying and selling interests to interact in a systematic fashion. Interaction is usually electronic, e.g. using a platform, but can also take place by other means, e.g. voice. MTFs are distinct from OTFs in that they cannot exercise discretion in the matching of buying and selling interests.
- NASDAQ OMX.....Now known as NASDAQ Nordic, a trading venue facilitating the trading of equities Denmark, Finland, Iceland, and Sweden.

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- National competent authority An alternative term for a national financial regulator, particularly in the EU.
- New York Board of Trade A US DCM that rebranded to ICE Futures U.S. in September 2007.
- New York Mercantile Exchange A US DCM that is part of the CME Group and facilitates the trading of commodity products, particularly in agricultural, energy and metals products.
- Non-discriminatory access Requirement upon trading venues to offer access on transparent and equal terms to prospective members and clearers of their products.
- Non-financial entity .....An entity that is not licensed and/or authorised to act as a bank, broker-dealer, investment firm or any other type of financial institution. Typically uses the financial markets to hedge risk or, on occasion, speculate.
- Non-small and non-interconnected firm A type of investment firm in the EU or UK that is deemed to pose a higher risk to the financial system, e.g. because it holds clients' assets or takes proprietary risk.
- Ontology.....Per Britannica, the philosophical study of being.
- Open outcry .....A form of trading / price formation that takes place on a physical trading floor where dealers or brokers shout bids and offers at each other.
- Operational risk.....Per Basel II (2011): "The risk of loss resulting from inadequate or failed internal processes, people and systems or from external events."
- Option.....A financial instrument which confers the holder the right but not the obligation to buy or sell underlying asset (e.g. another financial instrument) at a specified price within a set period.
- Order.....An instruction to buy or sell a financial instrument.



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- Order flow .....Series of orders sent from one financial institution to another for execution.
- Organised Trading Facility A type of trading venue in the EU and UK which is like MTF but where the operator exercises discretion in the matching of orders.
- Over the counter.....For the purposes of this thesis, a transaction arranged and entered off a trading venue and, typically, resulting the taking a bilateral risk, i.e. the business is not cleared.
- Payment for order flow...Also “PFOF”, arises where a trading firm incentivises another investment firm, usually an agency broker, to send that trading firm its clients’ orders. The trading firm then has an opportunity to “fill” or “transact on” these orders. The FCA believes PFOF runs contrary to an agency broker’s best execution obligations. This is because an agency broker may send its clients’ orders to the trading firm that offers the agency broker the most favourable incentives, rather than to the trading firm that is offering the most favourable execution terms to fill clients’ orders.
- Personal account dealing Refers to employees or other representatives of regulated firms transacting in investments for themselves, a practice that could give rise to a conflict of interest.
- Physical user .....In the context of the commodity markets, an entity which uses a physical commodity as part of its business operations, e.g. to manufacture products such as aircraft or jewellery.
- Picking off.....For the purposes of this thesis, a practice where fast traders, typically employing algorithms, take advantage of out-of-date bids and offers posted by slower traders.
- Pillar 3 statement .....Prior to the entry into force of the IFPR on 1<sup>st</sup> January 2022 UK broking and trading firms were required to make certain disclosures about their risk management framework and capital

## Glossary of Terms

position pursuant to the capital adequacy regime that was previously applicable to investment firms. Known as “Pillar 3”, this has been replaced by a similar requirement in the IFPR.

Pit .....A colloquial term for an open outcry trading floor, particularly in the US.

Platform .....Usually, a software application which has been developed to enable the trading of financial instruments.

Post-trade .....Refers to any activity that takes place after a transaction in a financial instrument has been concluded, e.g. confirmation, reporting and collateralisation.

Pre-trade .....Refers to any activity that takes place before a transaction in a financial instrument has been concluded, e.g. the reception and transmission of an order, entering an RFQ.

Price collar .....Per NASDAQ (Undated-p): “ceiling and floor of the price fluctuation of an underlying asset.”

Price discovery .....The process of determining a fair value of a financial instrument.

Price ramping .....Aggressive trading that seeks to significantly increase or decrease the price of a financial instrument.

Primary dealer .....A financial institution, usually a bank, that has been approved to participate in auctions operated by national governments for the sale of securities in public debt.

Prime brokerage service A “one stop shop” service offered to buy side market participants by sell side institutions encompassing execution, custody, reporting, lending, and cash management.

Principal model .....Model of transacting in financial instruments where the parties become counterparties to each other and are therefore exposed to the risk that the other party may not be able to fulfil its contractual obligations.

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- Principles-based approach** An approach to regulating financial services that relies upon general principles rather than detailed rules. This aims to minimise the opportunity for market participants to “game” requirements. It also offers flexibility in the face of technological change.
- Production environment** Refers to the deployment of an algorithm in live trading.
- Proximity hosting**.....Like co-location but involving the placement of servers in a third party’s data centre located next to a trading venue rather than in that trading venue’s own data centre.
- Prudential Regulation Authority** Financial regulator that jointly regulates the most systemically important financial institutions in the UK with the FCA, most notably banks. Most investment firms that act as broker-dealers in the UK are solely regulated by the FCA.
- Python**.....A computer programming language that is often used to programme trading algorithms.
- Quantitative** .....A research or trading technique that is based on numerical data.
- Quote**.....The terms of which a market participant offers to buy or sell a financial instrument.
- Quote stuffing**.....A manipulative practice involving the flooding of a trading venue’s CLOB with bogus quotes with the intention of slowing down other market participants.
- Rebate programme**.....An incentive scheme offered by a trading venue to entice liquidity providers and market makers.
- Recognised Central Securities Depositories** Per the FCA (2016b): “an institution that holds financial instruments, including equities, bonds, money market instruments and mutual funds.”
- Recognised Clearing House** An entity recognised by the BoE to operate a clearing house in the UK.

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**Recognised Investment Exchange** An entity recognised by the FCA to operate an exchange in the UK.

**Recognised Overseas Investment Exchange** An overseas entity recognised by the FCA to operate an exchange in the UK.

**Regulatory Technical Standard 6** Technical standard to MiFID II that sets operational requirements that firms engaged in algorithmic trading or which offer direct electronic access must abide by.

**Request for quote** .....A price discovery mechanism operated by a trading venue where participants can request quotes to enter specific transactions from other participants.

**Retail**.....Typically, financial services business conducted with natural persons, small businesses, and charities.

**Retail brokerage** .....A brokerage firm that primarily or largely serves retail clients.

**RIE Sourcebook** .....Part of the FCA's Handbook that governs the operation of RIEs.

**Ring dealing member** .....A member of the LME that has the right to transact on the LME's open outcry trading floor, known as the "Ring".

**Rolling bad apple**.....A financial service professional with a poor disciplinary history who moves from one financial institution to another, potentially exhibiting poor behaviour at each.

**Rules-based approach** ..A system of regulation that relies on specific rules rather than general principles to regulate behaviour.

**S&P 500**.....The Standard and Poor's 500 is a US stock index that monitors the performance of the 500 biggest companies listed in the US.

**Scimago Journal Rank**....One of the leading systems for ranking the impact of academic journals.

**Second line of defence** ..Refers to the control functions in a financial services organisation, particularly compliance and risk.

**Section 166 Report** .....Section 166 of the Financial Services and Markets Act 2000 permits the FCA to require that an authorised person (a

## Glossary of Terms

regulated firm) procure a report “with respect to any matter” from a third-party expert. The report is then used by the FCA to inform its supervision of the subject firm. Also known as a “skilled persons review”.

**Securities and Exchange Commission** US regulator. From USA.gov (Undated-ai): “The Securities and Exchange Commission oversees securities exchanges, securities brokers and dealers, investment advisors, and mutual funds in an effort to promote fair dealing, the disclosure of important market information, and to prevent fraud.”

**Security** .....Typically, a stock or a bond.

**Self-directed trading** .....Trading that is conducted by the end user of a financial market, typically using an electronic platform issued by a brokerage firm, rather than using the services of a broker to execute trades.

**Self-Regulatory Organisation** Typically based in the US, a private entity or “club” that sets its own rules that its members must abide by and disciplines members in the event they breach these rules.

**Sell side** .....A financial services institution that sells products and services to other market participants (known as the “buy side”).

**Senior Manager** .....A key decision maker in a regulated financial institution, typically occupying a c-suite function, e.g. a Chief Executive Officer.

**Senior Managers and Certification Regime** An “accountability framework” in the UK “focused on senior management” that requires firms to “take more responsibility for employees being fit and proper, and that there be better standards of conduct.” (2015b)

**Service company (2004)**. Per the FCA’s Glossary: “Service companies are firms whose regulated activities are restricted to deciding with a view to transactions in investments and agreeing to carry on that regulated activity.”

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They are, in the main, technology companies who provide order routing, post-trade processing, or other services to market participants which assist them to deal in investments or arrange (bring about) deals in investments among themselves.”

Shanghai Futures Exchange      China’s leading trading venue for the trading of commodity derivatives.

Short squeeze .....Anti-competitive and abusive practice where a market participant builds a large position in a financial instrument or commodity with the intention of forcing other participants to buy or sell at high prices.

Skilled Person Report ....Another term for a Section 166 Report.

Slow trader .....Colloquialism referring to a trader that does not employ high frequency trading techniques.

Sludge .....Defined by the FCA (2021ak) as “an excessive friction that hinders consumers from making decisions in their interests, by taking advantage of their behavioural biases.”

Social licence .....Defined in the Springer Encyclopaedia of Corporate Responsibility as: “the perceptions of local stakeholders that a project, a company, or an industry that operates in a given area or region is socially acceptable or legitimate.”

Social Science Research Network    A research database, typically featuring unpublished papers.

Speed bump .....Functionality employed by some trading venues to slow down the rate at which orders are received with the aim of increasing fairness, i.e. to ensure that HFTs do not dominate a matching engine.

Spoofing .....Often combined with layering, the placement of an order with no intention to execute it. The objective of this practice is to deceive other market participants.

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- Spot foreign exchange ...A foreign exchange transaction that is settled within two days of execution.
- Stress testing.....This refers to a financial institution, clearing house or trading venue simulating severe disruption or challenges for the purpose of gauging its resilience and/or testing the effectiveness of its control environment.
- Sunshine test .....Ethical test designed to encourage actors to stop and think about the potential consequences of their behaviour by asking “if this behaviour ever saw the light of day, would you be embarrassed by it?”
- Surveillance officer .....A professional employed by a regulator, exchange, or financial institution to detect potential instances of market abuse and other forms of misconduct.
- Surveillance system.....A system used by a regulator, exchange or financial institution that seeks to detect potential instances of market abuse and other forms of misconduct.
- Swap.....An agreement between two parties to exchange one financial instrument, or cash flow, for another.
- Systematic Internaliser..A financial institution that fulfils its customers’ orders by buy and selling on its own account. This contrasts with executing those orders on a trading venue or matching them with each other.
- Systemic risk .....Defined by the FSB (Undated-aj) as “the risk of disruption to the flow of financial services that is: (i) caused by an impairment to all or parts of the financial system; and (ii) has the potential to have serious negative consequences for the real economy.”
- Tagging.....Refers to the practice of assigning an algorithm a unique identifier so an investment firm retains a clear audit trail of when it has been used to execute a transaction. This practice was

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incorporated into EU wide legislation through Article 9 Commission Delegated Regulation (EU) 2017/590.

Technical standards .....A “child” regulation that is subordinate to a broader “parent” regulation and which provides more detailed specifications or requirements regarding how to comply with certain obligations contained in the parent regulation.

TechReg .....For the purposes of this thesis, software developed by an ISV to assist a financial institution in meeting its regulatory obligations.

Third line of defence .....Usually refers to a firm’s internal audit function. This function seeks to provide assurance that a firm’s systems and controls are operating effectively.

Third party vendor .....For the purposes of this thesis, another term for ISV.

Throttle.....A control operated by a trading venue or financial institution which aims to restrict the volume of order messages that market participants can place in quick succession to prevent disorderly or abusive conduct.

Tone from the top .....Example set by a firm’s senior management to the rest of its staff in terms of expected standards of behaviour.

Trade.....A concluded transaction (usually, buy or sell) in a financial instrument.

Trader.....A legal or natural person who transacts on the financial markets for his own account.

Trading venue .....All-encompassing term that captures any facility where multiple buying and selling interests can interact resulting in the conclusion of financial transactions, e.g. ATs, RIEs, DCMs, MTFs and OTFs.

Tranche.....A large order or execution that has been broken into smaller pieces.



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- Treating Customers Fairly An initiative introduced by the UK FSA to improve the behaviour of financial institutions towards their customers.
- Voice platform.....A platform for the oral negotiation of transactions on the financial markets, also known as “telephone trading”.
- Wash trade.....Defined by the FCA (2013b) as “a sale or purchase of a qualifying investment where there is no change in beneficial interest or market risk, or where the transfer of beneficial interest or market risk is only between parties acting in concert or collusion, other than for legitimate reasons”.
- Wealth manager .....A financial professional who is given discretion by his client to make investment decisions for the purposes of generating revenue or protecting against loss.
- Web of Science.....A business research database.
- WebICE.....Proprietary trading platform developed by Intercontinental Exchange Inc that members can use to transact on its exchanges, including ICE Futures Europe and ICE Futures U.S.
- Westlaw .....A legal research database.
- Wholesale .....For the purposes of this thesis, business-to-business interactions in the financial markets for the purposes of hedging or speculating.

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