

**UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF ILLINOIS  
EASTERN DIVISION**

MISH INTERNATIONAL MONETARY INC.,

Plaintiff,

v.

VEGA CAPITAL LONDON, LTD., ADRIAN  
SPIRES, PAUL COMMINS, GEORGE  
COMMINS, CHRISTOPHER ROASE,  
ELLIOTT PICKERING, ARITSOS  
DEMETRIOU, CONNOR YOUNGER, JAMES  
BIAGIONI, HENRY LUNN, PAUL SUTTON,  
and MATTHEW RHYS THOMPSON,

Defendants.

No. 20 CV 4577

Judge Manish S. Shah

**MEMORANDUM OPINION AND ORDER**

Plaintiff Mish International Monetary Inc. alleges that defendants coordinated a scheme to manipulate the West Texas Intermediate crude oil futures market. The alleged scheme unfolded on April 20, 2020, when prices went negative for the first time in history. Most of Mish's claims under the Sherman Act, the Commodity Exchange Act, and its state-law claim for unjust enrichment survived defendants' second motion to dismiss. *Mish Int'l Monetary Inc. v. Vega Cap. London, Ltd.*, 648 F.Supp.3d 980 (N.D. Ill. 2022). Mish now seeks to certify a class under Federal Rule of Civil Procedure 23(b)(3).

**I. Legal Standards**

The party seeking class certification under Federal Rule of Civil Procedure 23 bears the burden of demonstrating that certification is proper by a preponderance of the evidence. *Jacks v. DirectSat USA, LLC*, 118 F.4th 888, 895 (7th Cir. 2024). I must

resolve any disputes that are material to class certification, even if such analysis overlaps with the merits. *Amgen Inc. v. Connecticut Ret. Plans & Tr. Funds*, 568 U.S. 455, 465–66 (2013). When an expert’s testimony is “critical to class certification,” I must rule on the admissibility of challenged testimony. *Messner v. Northshore Univ. HealthSystem*, 669 F.3d 802, 812 (7th Cir. 2012) (citing *Am. Honda Motor Co. v. Allen*, 600 F.3d 813, 815–16 (7th Cir. 2010)). “Merits questions may be considered to the extent—but only to the extent—that they are relevant to determining whether the Rule 23 prerequisites for class certification are satisfied.” *Amgen*, 568 U.S. at 466. Class certification proceedings are not “a dress rehearsal for a trial on the merits.” *Messner*, 669 F.3d at 811.

## **II. Background**

I assume familiarity with the earlier opinions ruling on defendants’ motions to dismiss. *See Mish Int’l Monetary Inc. v. Vega Cap. London, Ltd.*, 596 F.Supp.3d 1076 (N.D. Ill. 2022), and *Mish Int’l Monetary Inc. v. Vega Cap. London, Ltd.*, 648 F.Supp.3d 980 (N.D. Ill. 2022). Those opinions explain at greater length the contours of the crude oil futures market, the alleged scheme, and events on April 20, 2020. In brief, plaintiff Mish International Monetary, Inc. alleges that defendants engaged in a scheme to manipulate the price of West Texas Intermediary crude oil futures contracts. *See Mish I*, 596 F.Supp.3d at 1085–90, and *Mish II*, 648 F.Supp.3d at 986–89.

### A. The Parties

Plaintiff Mish International Monetary, Inc. is a company that deals in rare coins and precious metals. [129] ¶ 29; [312-16] at 34:4–35:3.<sup>1</sup> Robert Mish is the company's sole owner. [312-16] at 301:14–20. At 12:42 p.m. Central Time on April 20, Mish purchased ten May Contracts for West Texas Intermediary crude oil via its broker at \$2.15 per barrel.<sup>2</sup> [312-16] 198:25–199:15. Thirty-four minutes later at 1:16 p.m., Mish sold ten May Contracts at \$7.09 and \$7.10 per barrel to liquidate its long position, incurring a net loss of \$92,490. [129] ¶ 29; [312-16] 137:19–138:10.

Defendant Vega Capital London, Ltd. traded May futures contracts of WTI crude oil on April 20 through GH Financial, a futures brokerage firm. [129] ¶¶ 30–31. Defendant Adrian Spires is Vega's sole owner. [129] ¶ 34.

Individual traders maintained accounts with Vega. [129] ¶ 32. The traders entered orders and made trades through GH Financial in the name of and through Vega. [129] ¶ 32. The traders each committed capital to Vega to guarantee each other's losses. [129] ¶ 4. Ten trading defendants remain in this case: Paul Commins, George Commins, Christopher Roase, Elliott Pickering, Aritsos Demetriou, Connor Younger, James Biagioni, Henry Lunn, Paul Sutton, and Matthew Rhys Thompson. *Mish II*, 648 F.Supp.3d at 995–96.

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<sup>1</sup> Bracketed numbers refer to entries on the district court docket. Referenced page numbers are taken from the CM/ECF header placed at the top of filings, except in the case of citations to transcripts, which use the transcript's original page number. When a document has numbered paragraphs, I cite to the paragraph.

<sup>2</sup> All timestamps refer to U.S. Central Time.

## B. Alleged Scheme

The buyer of a futures contract holds a “long” position, and the seller holds a “short” position. *Mish II*, 648 F.Supp.3d at 986. WTI crude oil futures contracts are traded on the Chicago Mercantile Exchange Globex and ClearPort trading platforms. *Mish I*, 596 F.Supp.3d at 1085. The New York Mercantile Exchange offers WTI futures contracts via physical settlement whereas the Intercontinental Exchange offers the same WTI futures contracts via cash settlement. [129] ¶¶ 196–98. Intercontinental Exchange WTI futures contract prices mirror the NYMEX WTI settlement prices. [129] ¶ 198. All trading defendants bought and sold NYMEX May 2020 contracts through the CME Globex platform. [129] ¶ 18. Some of the trading defendants also bought and sold Intercontinental Exchange May 2020 contracts. *Mish I*, 596 F.Supp.3d at 1086.

Physical settlement means the buyers holding a “long” position on the specified delivery date must pay for and receive physical delivery of crude oil. *Mish II*, 648 F.Supp.3d at 986. Likewise, a seller holding a “short” position receives payment and must physically deliver the oil. *Id.* Physical delivery is made at storage facilities in or around Cushing, Oklahoma. [129] ¶ 79. The delivery date for NYMEX May 2020 WTI futures contracts was on April 21, 2020. *Mish II*, F.Supp.3d at 986.

A “Trade at Settlement” order allows a trader to buy or sell a futures contract at the daily settlement price determined at the end of a trading day between 1:28 p.m. and 1:30 p.m. Central Time. *Mish II*, 648 F.Supp.3d at 987. By exerting downward pressure on May Contract prices throughout the course of the day, defendants allegedly profited from buying May Contracts at an artificially low

settlement price via Trade at Settlement on April 20. *Id.* They profited to the tune of \$632,814,390. *Id.* Prices went negative for the first time in history on April 20, meaning that traders who were selling contracts would have to pay buyers to accept physical delivery of crude oil. *Id.*

Plaintiff's remaining claims allege: a conspiracy to fix prices in violation of Section 1 of the Sherman Act; price manipulation in violation of Section 9(a)(2) of the CEA; use of a manipulative device in violation of Section 6(c)(1) of the CEA and the CFTC's regulations; aiding and abetting under Section 13 of the CEA; and a state-law claim for unjust enrichment. *Mish II*, 648 F.Supp.3d at 995–96.

### **III. Analysis**

Under Rule 23(a), a plaintiff must satisfy four prerequisites: (1) numerosity; (2) commonality; (3) typicality; and (4) adequate representation. Fed. R. Civ. P. 23(a). After meeting this threshold, a plaintiff must “satisfy through evidentiary proof” at least one of the Rule 23(b) prongs. *Comcast Corp. v. Behrend*, 569 U.S. 27, 33 (2013). *Mish* seeks to certify a class under Rule 23(b)(3), which requires that “questions of law or fact common to class members predominate over any questions affecting only individual members, and that a class action is superior to other available methods for fairly and efficiently adjudicating the controversy.” Fed. R. Civ. P. 23(b)(3); [311] at 12. In addition to Rule 23's explicit requirements, class definitions must be ascertainable. *Mullins v. Direct Digital, LLC*, 795 F.3d 654, 657 (7th Cir. 2015). A class definition cannot be “too vague or subjective” or “defined in terms of success on the merits (so-called ‘fail-safe’ classes).” *Id.*

**A. Proposed Class Definition**

Mish seeks to certify a class of:

All persons and entities that sold a May 2020 light sweet crude oil (WTI) futures contract (“May contract”) traded on the New York Mercantile Exchange between 9:00 a.m. CST and 1:30 p.m. CST (inclusive) on April 20, 2020 (including by trade at settlement (“TAS”)), to liquidate a long position in the May contract.

[311] at 12. The proposed class excludes, “Defendants, their officers, directors, management, employees, subsidiaries, or affiliates and federal governmental entities.” [311] at 12.

A class is clearly defined if it identifies “a particular group, harmed during a particular time frame, in a particular location, in a particular way.” *Mullins*, 795 F.3d at 660. The proposed class definition identifies a particular group (traders who sold a WTI crude oil futures contract), harmed in a particular way (selling contracts to liquidate a long position at an artificially depressed price), in a particular location (the New York Mercantile Exchange), during a particular time (from 9:00 a.m. to 1:30 p.m. on April 20). [311] at 21. The class is based on objective criteria, here, trading conduct. *See Mullins*, 795 F.3d at 660 (a class defined in terms of conduct rather than a state of mind generally avoids the subjectivity problem). Class membership does not depend on defendants’ liability. *See id.* The class definition is ascertainable.

**B. Numerosity**

The proposed class must be too numerous for practicable joinder. Fed. R. Civ. P. 23(a)(1). A plaintiff need not identify the exact number of class members, *Anderson v. Weinert Enters., Inc.*, 986 F.3d 773, 778 (7th Cir. 2021), but they cannot rely on “mere speculation or conclusory allegations as to the size of the putative class to prove

that joinder is impractical for numerosity purposes.” *Arreola v. Godinez*, 546 F.3d 788, 797 (7th Cir. 2008) (internal quotation marks omitted). A forty-member class is typically sufficient to satisfy the numerosity requirement. *Orr v. Shicker*, 953 F.3d 490, 498 (7th Cir. 2020). The key numerosity inquiry is “not the number of class members alone but the practicability of joinder.” *Anderson*, 986 F.3d at 777. That inquiry depends on “the nature of the action, the size of the individual claims, and the location of the members of the class or the property that is the subject matter of the dispute.” *Id.*

Mish points to CME audit trail data for April 20 that reflects “approximately 1,138 unique account numbers that sold a May contract to liquidate a long position.” [311] at 22. Mish acknowledges that an individual class member could have traded through multiple accounts but asserts that it is likely that others traded through a single account. Though Mish does not offer a basis for that likelihood, it points to other evidence to support numerosity: (1) a CFTC report identifying 173 distinct trader IDs holding “reportable positions” in the May 2020 contract and (2) CME data showing that large traders in the NYMEX WTI crude oil futures contract are geographically distributed across 35 states and 47 different countries. [311] at 22; [390] at 27; [356-34] at 21 (CFTC November 2020 Report).

Defendants suggest in a footnote that plaintiff “may not even meet the numerosity requirement” because defendants’ expert identified only 11 other accounts who traded like Mish, i.e., accounts that bought non-TAS contracts at positive prices and sold an equal number of contracts after prices went negative but

before 1:24 p.m. [352] at 12, 51 n.30. That suggestion rests on their argument that “TAS sellers” (who sold via “Trade at Settlement” and were locked into the settlement price on April 20) should be distinguished from “non-TAS sellers” like Mish (who sold outright at the price at time of sale). [352] at 37; [129] ¶¶ 88–90. That’s not a factual dispute about the number of potential class members who may have traded through multiple accounts and are therefore overcounted in the 1,138 estimate. Plaintiff’s figure may overestimate class size, but the CFTC report suggests that a proposed class would exceed at least 173 traders. That’s sufficient. The remote nature of futures trading and the geographic dispersion of traders further support a finding that joinder would be impractical. *Compare* [129] ¶ 29 (Mish traded from California), *with* ¶¶ 42–58 (the Vega defendants traded from the United Kingdom); 7A Charles Alan Wright & Arthur R. Miller, *Fed. Prac. & Proc.* § 1762 (4th ed.) (“When the court finds that the class members are widely dispersed geographically, then their joinder may be deemed impracticable.”). Numerosity is satisfied.

### **C. Typicality and Adequacy**

A class representative’s claims and defenses must be “typical of the claims or defenses of the class.” Fed. R. Civ. P. 23(a)(3). “A plaintiff’s claim is typical if it arises from the same event or practice or course of conduct that gives rise to the claims of other class members and [is] based on the same legal theory.” *Lacy v. Cook Cnty., Illinois*, 897 F.3d 847, 866 (7th Cir. 2018) (internal quotation marks omitted). “Typicality under Rule 23(a)(3) should be determined with reference to the [defendant’s] actions, not with respect to particularized defenses it might have

against certain class members.” *Wagner v. NutraSweet Co.*, 95 F.3d 527, 534 (7th Cir. 1996).

Typicality often “merges with the further requirement that the class representative ‘will fairly and adequately protect the interests of the class.’” *CE Design Ltd. v. King Architectural Metals, Inc.*, 637 F.3d 721, 724 (7th Cir. 2011) (quoting Fed. R. Civ. P. 23(a)(4)). A class representative should “have the same interest and injury as other [class] members.” *Santiago v. City of Chicago*, 19 F.4th 1010, 1018 (7th Cir. 2021) (citation omitted). “Conflicts of interest... create an issue of adequacy of representation by requiring the class representative to choose between competing class members.” *Id.* (quoting *Johnson v. Meriter Health Servs. Emp. Ret. Plan*, 702 F.3d 364, 372 (7th Cir. 2012)). A class representative may be an inadequate representative if their claim is subject to a unique defense. *CE Design*, 637 F.3d at 725. “The fear is that the named plaintiff will become distracted by the presence of a possible defense applicable only to him so that the representation of the rest of the class will suffer.” *Id.* at 726.

The same conduct underlying Mish’s claims supports the class’s claims: an alleged scheme to coordinate sales on April 20 and drive down prices of the May Contract, trading patterns on that day, communications between the trading defendants during and shortly after the class period, and actions taken or not taken by Vega Capital and Adrian Spires. *See Mish II*, 596 F.Supp.3d at 1086–90. Mish’s theory of liability and injury under the Sherman Act and Commodity Exchange Act are also shared with the class: the scheme artificially depressed the May Contract

price, so anybody who sold a May Contract at depressed prices was injured. *See Kohen v. Pac. Inv. Mgmt. Co. LLC*, 244 F.R.D. 469, 477 (N.D. Ill. 2007), *aff'd*, 571 F.3d 672 (7th Cir. 2009) (“All class members purchased the same futures contract within the class period, and, thus, all members were affected by defendants’ same course of conduct and alleged price manipulation.”).

Defendants argue that Mish’s claims are atypical of: (1) claims by class members who sold via Trade at Settlement and (2) claims arising from the last six minutes of the class period. [352] at 31–34.

The parties use “contract” and “order” interchangeably, but Trade at Settlement refers to an order type where a trader buys or sells a contract at the daily settlement price; it is not a different type of futures contract altogether. [129] ¶¶ 86–87; [352] at 10; CME Group, *Glossary*, <https://www.cmegroup.com/education/glossary.html#T> [https://perma.cc/6PYD-72AK] (“TAS is an order type that specifies the day’s settlement price as the order price.”). Mish sold the same May futures contract for WTI crude oil that other proposed class members sold. [129] ¶ 29. Under plaintiff’s theory, artificially depressed May Contract prices harmed TAS and non-TAS traders alike even if the degree of that harm, or “price impact,” may vary. Class members who sold via Trade at Settlement were locked into the settlement price on April 20 (negative \$37.63 per barrel) whereas non-TAS sellers sold at the price at the time of the transaction (negative \$7.09 and \$7.10 per barrel for Mish). *See* [129] ¶ 199; [312-16] at 137:19–138:10. Factual differences in class members’ specific transactions such as order type

and time of sale may affect potential recovery, but those differences do not preclude class certification. *See Rosario v. Livaditis*, 963 F.2d 1013, 1017 (7th Cir. 1992) (explaining that “some factual variation among the class grievances will not defeat a class action” because a “common nucleus of operative fact” is typically sufficient to satisfy commonality).

That’s not to say the difference in TAS and non-TAS orders is irrelevant to plaintiff’s theory of the case, only that the difference is of no consequence for purposes of determining typicality and adequacy. Plaintiff’s expert opines that asymmetric price impacts make manipulation profitable. [386-2] ¶ 77 (“[I]f TAS purchases drove up prices by as much as equivalent volume of outright and spread sales drove down prices, manipulation would be unprofitable.”), ¶ 100 (fewer informed trades in the TAS market than the outright market means trades have a smaller price impact in the TAS market). The difference in TAS and non-TAS orders helps explain plaintiff’s theory of manipulation, but the theory itself is common to all claims.

Defendants assert that the trading defendants were merely “conduits for TAS sellers,” and if they “had *not* bought TAS, those sellers would have had to sell in the non-TAS market, potentially driving prices even lower.” [352] at 34 (citing [356-1] ¶¶ 120–26 (Hendershott report)). Defendants may argue on the merits that price depression is better explained by forces other than market manipulation or that their trading conduct actually mitigated price depression by supplying liquidity to the market, but that doesn’t affect the typicality analysis. The course of conduct and theories underpinning plaintiff’s claims are typical to those of the class.

Defendants next argue that Mish would be an inadequate class representative because it would lack the incentive to vigorously litigate the circumstances of the last six minutes of the class period, a “flash crash.” [352] at 35. Mish sold ten May Contracts at 1:16 p.m. to liquidate its long position. [312-16] at 137:19–138:10. Because Mish “could prevail on its claim without any evidence of price artificiality after 1:24 p.m.,” defendants assert that Mish would not have to rely on its expert’s “flash crash” opinion (which would be central to the claims of absent class members who sold May Contracts between 1:24 p.m. and 1:30 p.m.). [352] at 32–33. Defendants say this difference is substantial because the expert’s damages calculation attributes 97% of total loss to sales of May Contracts occurring in the last six minutes of the class period. [352] at 33 (including non-TAS orders sold during the last six minutes and TAS orders sold at the settlement price determined between 1:28 p.m. and 1:30 p.m.).

In *Kohen v. Pacific Investment Management Co. LLC*, 571 F.3d 672, 679–80 (7th Cir. 2009), the court recognized that potential conflicts of interest could arise where class members purchased futures contracts at different times during a seven-week class period. The plaintiffs alleged that defendant PIMCO “cornered” the market by purchasing large quantities of June Contracts in 10-year U.S. Treasury notes. *Kohen*, 571 F.3d at 675–76. Because the contracts required physical delivery of U.S. Treasury notes, short sellers who did not want to pay the monopoly price to close out their contracts executed offsetting futures contracts instead. *Id.* The plaintiffs lost money by purchasing offsetting contracts at a monopoly price (driven

by PIMCO's increased share of the market) rather than at a competitive price. *Id.* at 676. The court acknowledged that price fluctuations during the class period might engender conflict in proving price artificiality:

Class members covered by buying the June Contract, thus capping their losses, at different times during the seven-week period embraced by the complaint. One who covered very early would want to show that the effect of PIMCO's alleged misconduct peaked then. Moreover, the curve of rising prices for the June Contract dipped at one point during the complaint period and class members who covered during the dip might want to show that PIMCO's effect on the price level was completed by then and the post-dip rise in prices was due to market forces for which PIMCO was not responsible.

*Id.* at 679–80. Such a conflict, however, was hypothetical at the class-certification stage. *Id.* at 680. Even if such conflicts arose at a later stage, a district court could certify subclasses to address those conflicts. *Id.* But denying class certification “because of a potential conflict of interest that may not become actual, would be premature.” *Id.*

Potential conflicts between class members who sold May Contracts before 1:24 p.m. and those who sold between 1:24 p.m. and 1:30 p.m. are not concrete at this stage. *See Johnson*, 702 F.3d at 372 (suggesting a conflict may no longer hypothetical if a class member expresses concern of harm with pursuing a certain method of proof). Defendants' argument rests in part on a mischaracterization of the expert's analysis of the last six minutes of the class period. His TVP-VAR model estimates price impact based on net order flow data through 1:30 p.m. *See* [386-1] ¶ 31(e). But the expert found that order flow, standing alone, has little impact on prices during that time period. [386-1] ¶ 412. His “flash crash” opinion is not separate from that analysis; he opines that order flow patterns prior to 1:24 p.m. “create the conditions in which

Flash Crashes occur.” [386-1] ¶ 31(h). The label the expert puts on the last six minutes doesn’t change the nature of the data he is using to support his conclusion. See [386-1] ¶ 407 (conceding that whether the post-1:24 period is a “flash crash” or a “crash” is a matter of semantics). The expert is not relying on different trading data for different class members by analyzing the specific dynamics of the last six minutes. In the commodities-manipulation context, trading patterns and transaction volume directly preceding the settlement window can be probative of manipulation. Important here is that Mish shares a common interest with class members in proving that defendants’ trading conduct was sustained throughout the class period and that it steadily escalated over time. See [129] ¶ 2(a) (alleging defendants’ aggressive sales throughout the day exerted “cumulative net selling pressure” on the price of the May Contract); cf. *Blackie v. Barrack*, 524 F.2d 891, 909–10 (9th Cir. 1975) (explaining that it would be in each class members’ interest to “maximize the inflation” caused by defendant’s misrepresentations at “every point in the class period” both to establish liability and to maximize damages because “the more the stock is inflated, the more every class member stands to recover”). That’s unlike the situation in *Kohen* where prices dipped and recovered during the class period. Hypothetical conflicts between class members who sold May Contracts before 1:24 p.m. and those who sold during the last six minutes of the class period do not preclude class certification.

Defendants also argue that Mish is subject to a unique defense because it cannot prove proximate cause under the Sherman Act or Commodity Exchange Act. [352] at 36. Robert Mish testified that he purchased ten May Contracts at 12:42 p.m.

for a price of \$2.15 per barrel because he believed it had “limited risk.” [312-16] at 191:9–12, 196:8–10. Defendants contend that Mish should have known that prices could go negative that day, so any alleged manipulation would not be the proximate cause of Mish’s losses. [352] at 36. They also suggest that in a but-for world where prices still went negative absent the defendants’ trading conduct, Mish could have suffered *greater* losses if prices had gone below zero later in the day and forced it to liquidate its long position closer to the settlement window. [352] at 37. Robert Mish maintains that he would have purchased the May Contracts even if he had known about the possibility of prices trading below zero, and more importantly, plaintiff’s claims do not require proving defendants’ trading caused the prices to trade below zero. [390] at 36.

Robert Mish’s knowledge or lack thereof is beside the point. Plaintiff alleges defendants’ trading conduct “injected false information into the market regarding the May contract, thus creating a false value and sending a signal of false value for the May contract.” *Mish I*, 596 F.Supp.3d at 1097–98 (applying the same reasoning under Section 9(a) and Section 6(c)(1) of the CEA). That doesn’t require plaintiff to identify a specific misrepresentation, only that defendants’ trading conduct created an artificial price.<sup>3</sup> See *Frey v. Commodity Futures Trading Comm’n*, 931 F.2d 1171, 1175 (7th Cir. 1991) (“Manipulation, broadly stated, is an intentional exaction of a

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<sup>3</sup> Market manipulation cases are therefore distinguishable from the consumer fraud and product liability cases that defendants cite to. See [352] at 37 n.21 (citing *Sherwin v. Samsung Elecs. Am., Inc.*, No. 16 C 7535, 2019 WL 10854535, at \*3 (N.D. Ill. Dec. 18, 2019) (finding proposed class representative to be inadequate because her potential knowledge of the alleged defect before purchasing the product would be a defense to the proximate cause element of a consumer-fraud claim)).

price determined by forces other than supply and demand.”); *ATSI Commc’ns, Inc. v. Shaar Fund, Ltd.*, 493 F.3d 87, 100 (2d Cir. 2007) (“The deception arises from the fact that investors are misled to believe ‘that prices at which they purchase and sell securities are determined by the natural interplay of supply and demand, not rigged by manipulators.’”) (citation omitted); *Ploss v. Kraft Foods Grp., Inc.*, 431 F.Supp.3d 1003, 1013 (N.D. Ill. 2020), *perm. app. denied*, No. 20-8001 (7th Cir. Feb. 21, 2020) (“[I]n a commodities-manipulation case, the fraud on the market theory assumes that buyers and sellers rely on public misstatements whenever the investor buys or sells futures contracts at the price set by the market because the market transmits information to the participants in the form of the market price.”). If Mish establishes that defendants’ scheme created an artificial price, then any losses from selling at that artificial price would be proximately caused by defendants’ manipulation. Mish’s claim will succeed or fail on the same grounds as other class members. *See Hardy v. City Optical Inc.*, 39 F.3d 765, 770 (7th Cir. 1994) (unique defense bars class certification if “plaintiff’s claim is quite likely to be dismissed even if the other class members’ claims are meritorious”).

“Critically,” defendants say, “Mish’s situation is unique and unlike those of... TAS sellers, who were stuck with whatever the settlement price turned out to be, or even the non-TAS sellers, who may have delayed liquidating until the settlement in the vain hope that prices might rise.” [352] at 37. Again, the timing and price of a sale will vary among class members, and so too will the magnitude of loss. That will affect

individual damages, but it doesn't undermine Mish's adequacy as a class representative.<sup>4</sup>

Defendants do not challenge the adequacy of class counsel, [352] at 34–38, but I have an independent duty to ensure Rule 23(a)'s requirements are satisfied to “protect[] absent class members whose rights may be affected by the class certification.” *Davis v. Hutchins*, 321 F.3d 641, 649 (7th Cir. 2003). To determine whether class counsel is adequate, I consider the work they've done in identifying or investigating potential claims in the case; their experience in handling class actions, other complex litigation, and the types of claims asserted in the case; their knowledge of the applicable law; the resources they'll commit to representing the class; and anything else that's relevant to their ability to fairly and adequately represent the class. Fed. R. Civ. P. 23(g)(1)(A)–(B). Plaintiff's counsel investigated the claims to bring this lawsuit, filed amended complaints, conducted discovery, and expended resources to engage expert witnesses. [311] at 28. Both firms have decades of experience litigating complex class actions involving price-fixing and commodities manipulation claims under the Sherman Act and the CEA. *See* [348-2] at 5–7 (Lovell Stewart); [348-3] at 6–8 (Miller Law). Proposed class counsel is adequate to represent the putative class.

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<sup>4</sup> Defendants also allude to an arbitration provision under NYMEX Rule 600.A.1 to suggest an individual contract defense against Mish. *See* [352] at 50 n.29; [361] (letter requesting plaintiff to arbitrate its claims). I discuss the possibility of mandatory arbitration in the context of superiority. *See below* III.E.

#### **D. Commonality and Predominance**

Class certification is only appropriate if “there are questions of law or fact common to the class.” Fed. R. Civ. P. 23(a)(2). “[E]ven a single common question will do.” *Wal-Mart Stores, Inc. v. Dukes*, 564 U.S. 338, 359 (2011) (cleaned up). “The key to commonality is ‘not the raising of common questions . . . but, rather, the capacity of a class-wide proceeding to generate common answers apt to drive the resolution of the litigation.’” *Orr*, 953 F.3d at 498–99 (quoting *Wal-Mart v. Dukes*, 564 U.S. at 350). “Dissimilarities within the proposed class are what have the potential to impede the generation of common answers.” *Id.* at 499.

For certification under Rule 23(b)(3), these common questions must predominate over individual questions. Fed. R. Civ. P. 23(b)(3). The predominance inquiry focuses on whether a proposed class is “sufficiently cohesive to warrant adjudication by representation.” *Gorss Motels, Inc. v. Brigadoon Fitness, Inc.*, 29 F.4th 839, 843 (7th Cir. 2022) (quoting *Tyson Foods, Inc. v. Bouaphakeo*, 577 U.S. 442, 453 (2016)). Scrutiny should be given to “the relation between common and individual questions in a case.” *Tyson Foods*, 577 U.S. at 453. Evaluating predominance “requires more than a tally of common questions,” I must also weigh their “relative importance.” *Eddlemon v. Bradley Univ.*, 65 F.4th 335, 339 (7th Cir. 2023).

The predominance analysis turns on the elements of the underlying causes of action. *See Erica P. John Fund, Inc. v. Halliburton Co.*, 563 U.S. 804, 809 (2011). Plaintiff brings two central claims: price-fixing under Section 1 of the Sherman Act and manipulation under the Commodity Exchange Act (price-manipulation under

Section 9(a)(2) and use of a manipulative device under Section 6(c)(1)).<sup>5</sup> To prove price-fixing under the Sherman Act, plaintiff must establish: (1) an agreement between defendants; (2) that unreasonably restrained trade in the relevant market; and (3) injury. *In re Dairy Farmers of Am., Inc. Cheese Antitrust Litig.*, 801 F.3d 758, 762 (7th Cir. 2015). To prove manipulation under the CEA, plaintiff must establish that: (1) defendants possessed the ability to influence prices; (2) an artificial price existed; (3) defendants caused the artificial price; and (4) defendants specifically intended to cause the artificial price. *Id.* at 764–65.

Mish identifies four common questions across these claims: (1) whether defendants engaged in a conspiracy to restrain trade or to manipulate May Contract prices; (2) whether defendants intended to manipulate May Contract prices; (3) whether defendants had the ability to manipulate May Contract prices; and (4) whether May Contract prices on April 20 were artificially depressed.<sup>6</sup> [311] at 23; [390] at 39.

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<sup>5</sup> Plaintiff also brings an aiding and abetting claim under Section 13 of the CEA and an unjust enrichment claim, both of which require plaintiff to prove an underlying substantive violation. See *In re Dairy Farmers*, 801 F.3d at 765, and *Cleary v. Philip Morris Inc.*, 656 F.3d 511, 516 (7th Cir. 2011).

<sup>6</sup> Mish states that another common question is “whether the Fifth Amendment privilege assertions by the [trading defendants] and their refusals to produce documents and answer substantive questions at deposition entitle [Mish] to adverse inferences.” [311] at 23. “The general rule is that an adverse inference may be drawn from such a refusal in a civil case.” *In re High Fructose Corn Syrup Antitrust Litig.*, 295 F.3d 651, 663 (7th Cir. 2002). Whether an adverse inference is appropriate—and against whom it may be drawn—are evidentiary issues resolved at summary judgment or at trial. See [359] (Vega & Spires supplemental brief) (arguing that an adverse inference should not be drawn against Vega and Spires, who did not assert the privilege and responded fully to discovery requests); see *LaSalle Bank Lake View v. Seguban*, 54 F.3d 387, 391 (7th Cir. 1995) (explaining that an admission from an adverse inference “does not lead directly and without more to the entry of summary

Defendants primarily contest plaintiff's method to prove classwide "price impact" and calculate damages. [352] at 38, 40–47. The former goes to causation, and it's the core of the parties' dispute. *See Newton v. Merrill Lynch, Pierce, Fenner & Smith, Inc.*, 259 F.3d 154, 188 (3d Cir. 2001) ("Proof of injury (whether or not an injury occurred at all) must be distinguished from calculation of damages (which determines the actual value of the injury)."); *see also Greater Rockford Energy & Tech. Corp. v. Shell Oil Co.*, 998 F.2d 391, 401 (7th Cir. 1993) ("The proof required to show *causation* of damages is greater than that required to prove the *amount* of damages, where a plaintiff is afforded more latitude due to the 'vagaries of the marketplace.'") (emphasis in original).

Because defendants move to exclude plaintiff's expert testimony, I must rule conclusively on portions of the challenged testimony that are critical to the class-certification decision. *See Messner*, 669 F.3d at 812 (an expert opinion is "critical" if it is "important to an issue decisive for the motion for class certification").

Mish offers Dr. Craig Pirrong's testimony in support of its motion for class certification. Pirrong is a professor of finance at the University of Houston where he also serves as the Director of the Gutierrez Energy Management Institute. [386-2]

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judgment, but merely establishes the factual basis from which the Rule 56 analysis will proceed") (emphasis omitted). The individual defendants' refusal to testify may be relevant when determining liability against the factual record, but it does not present common questions for purposes of class certification. It's also unnecessary to draw adverse inferences at this stage because defendants do not dispute there is common evidence of conspiracy, though they dispute whether such evidence establishes liability. *But see In re Ready-Mixed Concrete Antitrust Litig.*, 261 F.R.D. 154, 172 n.19 (S.D. Ind. 2009) (finding that defendants' refusal to testify as to certain aspects of the conspiracy gave rise to a negative inference as to the existence and impact of the conspiracy that supported plaintiffs' showing of antitrust impact).

¶ 1. He has a PhD in Economics and has taught courses in industrial organization, economics, and finance for over 35 years. [386-2] ¶ 1. Pirrong wrote a book on the economics of futures trading titled *The Economics, Law, and Public Policy of Market Power Manipulation*. [386-2] ¶ 2. He also works as a consultant for agencies, derivatives exchanges, trading firms, and other entities on the topic of futures contract trading and manipulation. [386-2] ¶ 3.

Pirrong opines that defendants caused the price depression observed on April 20 and presents methods to measure how much of that price artificiality can be attributed to defendants. He presents three categories in his initial report: (1) an analysis of defendants' trading conduct compared to other market participants to determine whether defendants' conduct depressed prices of May Contracts on April 20; (2) a model to estimate the price depression attributable to defendants' orders; and (3) an analysis of the last six minutes of the class period (which he opines was a "flash crash") and a method to estimate the further depression of May Contract prices attributable to defendants. *See* [386-2] ¶¶ 6–10.

Market microstructure is a branch of financial economics that studies the price impact of trades and orders. [386-2] ¶ 78. Transactions and orders impact prices because of inventory costs and informational considerations (adverse selection). [386-2] ¶ 80. Information moves prices. [386-2] ¶ 75. In an efficient market, prices reflect the arrival of new information. [386-2] ¶ 93. Public information, like an exchange's alert at 12:06 p.m. warning that oil prices could go negative, is one such source of information. [386-2] ¶¶ 84, 207. Adverse selection costs arise when some market

participants hold private information about the value of a particular futures contract. [386-2] ¶ 84. Because trading results from private information, purchases and sales signal information to less-informed traders, thereby affecting prices. [386-2] ¶¶ 84, 92–93.

Pirrong began by analyzing trading data from April 20 and comparing defendants' trading conduct with other market participants to determine whether defendants' transactions in the May Contract affected prices. [386-2] ¶ 8. He did so by comparing defendants' "aggressor sales" of May Contracts with defendants' "aggressor purchases" via Trade-at Settlement. [386-2] ¶ 13(b). An "aggressive" order refers to a bid or sell order that matches the price in the market and results in an immediate execution. [386-2] ¶ 64. A "passive" order, on the other hand, does not result in immediate execution. [386-2] ¶ 64. Passive orders supply liquidity to the market. [386-2] ¶ 65. Liquidity refers to the ability to buy or sell without significantly impacting the price. [386-2] ¶ 65. Aggressive sales cause prices to fall, and aggressive purchases cause prices to rise. [386-2] ¶ 272. Generally, bigger transactions have bigger price impacts. [386-2] ¶ 272. Net order flow is the difference between aggressive buy and sell orders submitted during a specific time interval. [386-2] ¶ 75. Privately informed trading is one determinant of net order flow, so net order flow is informative, and in turn, order flow imbalances can affect prices. [386-2] ¶¶ 75, 207.

Next, Pirrong employed a Time Varying Parameter Vector Autoregression model to determine how much defendants' sales of May Contracts caused the price decline, in other words, how much price artificiality can be attributed to defendants'

allegedly manipulative trading. [386-2] ¶ 163. A vector autoregression model measures how trades move prices, accounting for the possibility that price movements also cause trades. [386-2] ¶ 164. The model estimates the dynamic relationship between a set of variables (relevant here, prices and signed trades). [386-2] ¶ 166. A standard VAR model assumes that all coefficients in the model and the variance-covariance matrix of the error terms are constant during the estimation period. [386-2] ¶ 174. That assumption means the VAR approach does not account for intra-day variations in price impact. [386-2] ¶ 174.

Given the price volatility on April 20 and uncertain economic conditions during the COVID-19 pandemic, Pirrong acknowledges that market uncertainty could have affected intra-day changes in price impacts. [386-2] ¶ 175. He explains that:

[P]ersistent order imbalances (like those experienced on April 20, 2020) can lead market participants to revise their estimation of the likelihood that orders are informed, which in turn alters price impacts. Since the [trading defendants] were major contributors to these order imbalances, and hence could have altered price impacts, an analysis of their effect on prices should allow for the possibility of time variation in price impacts. The market microstructure theory implies that price impact is likely to change because of the conditions that prevailed on April 20, 2020. Specifically, price impacts change due to persistent order imbalances: prices are more sensitive to aggressive sales after a period of persistent sell order imbalances than they would be without such an extended period of order imbalances.

[386-2] ¶ 175. Pirrong concludes that a VAR model that “allows for intra-day variation in price impacts, price volatilities, and price correlations” is necessary in this case. [386-2] ¶ 180. He adopts the Time Varying Parameter VAR model with stochastic volatility: model coefficients vary randomly over time, fluctuate randomly, and differ for every interval, and variances and covariances of the error terms also vary randomly over time. [386-2] ¶¶ 181, 186. Pirrong estimates a TVP-VAR model

for the entire class period (9:00 a.m. to 1:30 p.m.) divided into 15-second intervals. [386-2] ¶¶ 191–92. The model includes six variables with three lags: (1) the change in the May midpoint over the 15 second interval; (2) the change in the May-June spread midpoint over the 15 second interval; (3) the change in the June price over the 15 second interval; (4) the May order imbalance in the 15 second interval; (5) the May-June spread order imbalance in the 15 second interval; and (6) the June order imbalance in the 15 second interval. [386-2] ¶ 193. Impact of trades are represented through an impulse response function, which estimates “how a random shock to a given variable impacts all variables in the system.” [386-2] ¶ 196. The crux of the model is to isolate price variations caused by order flow. [386-2] ¶¶ 197–205, 334. Price variations that are not explained by order flow are attributed to public, non-trade-related information. [386-2] ¶ 207.

The final section of Pirrong’s report analyzes the last six minutes of the class period, which he characterizes as a “flash crash.” [386-2] ¶¶ 10, 208–21, 233–59. Pirrong observes that the last six minutes of the class period were characterized by extreme volatility followed by a sharp price reversal. *See* [386-2] ¶¶ 26. Based on the theory that severe order flow imbalance can cause a “flash crash,” Pirrong analyzed how much defendants’ orders contributed to the order flow toxicity (defined as large and persistent order flow imbalances in one direction) through a Volume-Synchronized Probability of Informed Trading method. [386-2] ¶¶ 119, 204. He found that order flow toxicity rose and peaked shortly before the price collapse. [386-2] ¶¶ 238–42. He opines that defendants were the primary cause of the increase in order

flow toxicity, and therefore, contributed to the price decline during the last six minutes. [386-2] ¶ 256. In short, Pirrong analyzes the last six minutes of the class period to conclude that price declines—even during the volatile period—can be attributed to defendants’ trade orders rather than external supply-and-demand forces. [386-2] ¶ 381. “[T]he post-1:24 p.m. price movements are instead best understood as ‘endogenous volatility’ characteristic of a flash crash. Such crashes occur because of the trading process itself, rather than as the direct result of the arrival of public information related to supply-demand fundamentals.” [386-2] ¶ 381.

In rebuttal to defendants’ expert, Terrence Hendershott, [356-1], Pirrong offers: (1) an event study comparing prices of May WTI crude oil futures contracts to other commodities that the CME alerted could potentially trade at negative prices on April 8, 2020; (2) analysis of storage constraints at Cushing related to supply-and-demand factors to rebut Hendershott’s “predominant view” that storage capacity caused the price declines; (3) responses to criticisms of his TVP-VAR model; (4) clarification of his “flash crash” opinion; and (5) responses to Hendershott’s characterization of trading defendants as legitimate speculators based on trading patterns and market factors. [386-1] ¶¶ 22–44.

Defendants seek to exclude four categories of Pirrong’s testimony under Federal Rule of Evidence 702 and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993): (1) analysis of storage capacity at Cushing that could explain price declines on April 20; (2) analysis of trading conduct that “ignores the obvious profitability of buying TAS contracts and selling non-TAS contracts ‘aggressively’ on

a day where prices were widely expected to fall”; (3) reliability of the TVP-VAR model to estimate price impact; and (4) the “flash crash” opinion analyzing the last six minutes of the class period. [355] at 9–11.<sup>7</sup> Though defendants draw attention to Pirrong’s previous engagements with class counsel, [355] at 11–14, his qualifications to provide expert testimony and the relevance of his opinions are not in dispute. *See Cruz-Vazquez v. Mennonite Gen. Hosp., Inc.*, 613 F.3d 54, 59 (1st Cir. 2010) (“Assessing the potential bias of an expert witness, as distinguished from his or her specialized training or knowledge or the validity of the scientific underpinning for the expert’s opinion, is a task that is ‘properly left to the jury.’”).

Apart from the TVP-VAR model, Pirrong’s testimony is not critical to class certification because plaintiff does not need his opinions to demonstrate that common questions predominate over individual ones. *See Schleicher v. Wendt*, 618 F.3d 679, 685 (7th Cir. 2010) (“If something about ‘the merits’... shows that individual questions predominate over common ones, then certification may be inappropriate.”).

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<sup>7</sup> Defendants also move to strike rebuttal reports by Pirrong, Dr. Talis Putnin, and Dr. Craig Goodrich responding to defendants’ expert, Terrence Hendershott. [414]. The motion to strike, [414], is denied. Pirrong’s rebuttal report offers new analyses, but only in response to methodological criticisms raised by defendants’ expert. *See* [386-1]; *see Peals v. Terre Haute Police Dep’t*, 535 F.3d 621, 630 (7th Cir. 2008) (“The proper function of rebuttal evidence is to contradict, impeach or defuse the impact of evidence offered by an adverse party.”). Rebuttal testimony from Putnin and Goodrich are not critical to class certification. At bottom, Putnin and Goodrich affirm that Pirrong’s TVP-VAR model is generally accepted in their respective fields and substantiate Pirrong’s model through replication. *See* [386-3] ¶¶ 15–24 (Putnin rebuttal); [386-4] ¶¶ 14–18 (Goodrich rebuttal). Defendants’ request for leave to conduct additional expert discovery in the alternative, [413] at 2, is denied as unnecessary. Discovery was stayed pending the court’s class-certification ruling, [407], and defendants will have the opportunity to conduct additional merits expert discovery. *Cf. Beaton v. SpeedyPC Software*, 907 F.3d 1018, 1023 (7th Cir. 2018) (no prejudice to defendant at class certification where district court allowed additional merits discovery after its ruling).

When issues affect market participants alike, for example, “whether statements were false, or whether the effects were large enough to be material,” then digging into the merits questions is inappropriate at the class-certification stage, even if the class is likely to lose on those issues. *See id.* As discussed below, defendants’ objections to Pirrong’s testimony largely implicate causation on the merits. But plaintiff is not required to prove the elements of a conspiracy, manipulative intent, or price impact at this stage. The question is whether Mish demonstrates common evidence and methodology capable of proving the essential elements of its claims. *See Messner*, 669 F.3d at 818 (“The ability to use... common evidence and common methodology to prove a class’s claims is sufficient to support a finding of predominance on the issue of antitrust impact for certification under Rule 23(b)(3).”); *Blades v. Monsanto Co.*, 400 F.3d 562, 566 (8th Cir. 2005) (“The nature of the evidence that will suffice to resolve a question determines whether the question is common or individual.”).

*i. Existence of Scheme and Manipulative Conduct*

Mish identifies two key categories of evidence that support the existence of a conspiracy and manipulative trading behavior (including the ability to influence prices and manipulative intent): CME data of buy-and-sell orders and communications between the traders. *See* [129] ¶¶ 164–179.

Based on the CME data, Pirrong found that the trading defendants sold 11,633 May Contracts in aggressor sales and purchased 82 May Contracts in aggressor

purchases via Trade-at-Settlement.<sup>8</sup> [386-2] ¶ 13(b). Pirrong compared defendants' trading volume with the rest of the market: 58% of defendants' trading volume in May-June spread orders was "extremely aggressive" compared to 9% for all other traders; 73% of the defendants' trading volume in May Contracts was "extremely aggressive" compared to 14% for all other traders. [386-2] ¶ 13(b). He also found that defendants ramped up the rate of their aggressor sales from 10:30 a.m. onwards, increasing their share of aggressive sales to more than 63% from 1:08 p.m. to 1:30 p.m. [386-2] ¶ 21. Defendants' sales of May Contracts represented 69% of the order imbalance from 1:24 p.m. until settlement. [386-2] ¶ 22. Overall, Pirrong opines that defendants' increasing volume of aggressor sales had an "increasingly depressive effect" on May Contract prices and "increasingly exacerbated the order imbalance." [386-2] ¶ 13(c).

Defendants disagree with Pirrong's classification of "aggressor" sales and application of market microstructure theory to explain what made manipulation possible and profitable, instead characterizing defendants' trading patterns as wholly consistent with basic speculation strategies (i.e., selling high and buying low based on the possibility of negative pricing). [352] at 18; [355] at 26. Defendants' expert, for example, points out that defendants did not trade between 1:28 p.m. and 1:30 p.m., a window which would have been a "hallmark" of manipulative trading behavior where

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<sup>8</sup> The CME Globex system identifies the "aggressive" and "passive" party when a marketable order is submitted. [386-2] ¶ 74. That's distinct from what Pirrong classifies as "extremely aggressive trading" involving offers made below the best bid in quantities larger than the depth at the best bid. *See* [386-2] ¶ 314.

traders attempt to artificially inflate or depress prices close to the settlement window. [352] at 19. Whether the trading data supports defendants’ theory of mere speculation or plaintiff’s theory of manipulative trading strategy is a critical question, but it is one that can be answered through common proof, through the trading data itself and Pirrong’s analysis of the data. Because Mish can point to common evidence without relying on Pirrong’s analysis of trading patterns, I need not rule on defendants’ *Daubert* challenges to those opinions. *See* [355] at 18, 26–29.

Evidence of communication between the traders also serves as common evidence to prove the existence of a conspiracy, “uneconomic” motive, or manipulative intent. *See Mish I*, 596 F.Supp.3d at 1092–95, 96–98. The traders exchanged messages during and shortly after the class period, [129] ¶¶ 166–79, 311:

- “Just keep selling it every 5 points”
- “I’ve got 300 left for late”
- “Fucking mental. I wanna see negative WTI”
- Lunn asked, “I’m short 160 spreads and 40 wti... Are you boys adding to this?” and Younger responded, “I’m short 1250 and 500 not doing anymore until late”
- Demetriou asked, “is everyone short ti front” and Paul Commins responded, “Yep but not loads”
- “We pushed each other so hard for years for this one moment... And we fucking blitzed it boys”
- “Please don’t tell anybody what happened today lads x”
- “Do not tel [*sic*] a fucking soul what’s happened”

GH Financial’s communications with Vega’s owner Adrian Spires after GH had received alerts from its trade surveillance system also serves as class-wide evidence.<sup>9</sup>

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<sup>9</sup> Defendants Vega and Adrian Spires assert that allegations about their failure to monitor the individual traders amount to mere negligence. [359] at 21. That’s a merits issue that Vega and Spires insist is appropriate for me to weigh at the class-certification stage. *See* [359] at 14 (“[T]he possibility of ruinous liability—combined with a highly doubtful claim—is a good

See, e.g., [129] ¶ 182 (GH’s trade surveillance officer requesting responses about the purpose and strategy behind trading defendants’ activities), ¶ 186 (Spires responding, in part, that the traders “discuss their views on the market on a daily basis despite now trading from separate locations”).

Defendants accuse plaintiff of mischaracterizing statements by taking them out of context; for example, by omitting part of Lunn’s statement, “You’ve got to think” before “[e]veryone is going to have ammo” to obscure the speculative nature of the comment. See [352] at 19 n.11. Competing inferences may be drawn from the full record, but that’s a merits dispute that is capable of (and particularly amenable to) class-wide resolution. See, e.g., *Kleen Prods. LLC v. Georgia-Pac. LLC*, 910 F.3d 927, 939 (7th Cir. 2018) (finding at summary judgment that “[plaintiffs’] noneconomic evidence—even when viewed with the parallel conduct—does not exclude the possibility that [defendant] acted in a self-interested but permissible way”). Here, common evidence of trading conduct and contemporaneous communications between traders, regardless of whether it reflects illegal manipulation or innocuous speculation, suggests predominance. Cf. *In re Urethane Antitrust Litig.*, 768 F.3d 1245, 1255 (10th Cir. 2014) (“In price-fixing cases, courts have regarded the existence

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reason to deny certification of a class.”) (citing *Matter of Rhone-Poulenc Rorer, Inc.*, 51 F.3d 1293 (7th Cir. 1995)). It is not. *Rhone-Poulenc* predates the adoption of Rule 23(f), which permits interlocutory appeals of class-certification orders. See Fed. R. Civ. P. 23(f), advisory committee’s notes on 1998 amendment. The incentive to settle unmeritorious claims first articulated in *Rhone-Poulenc* and enshrined in Rule 23(f) justifies a court’s “peek” into the merits to conduct a rigorous analysis, but it does not grant a court the “license to engage in free-ranging merits inquiries.” See *Simpson v. Dart*, 23 F.4th 706, 711 (7th Cir. 2022) (quoting *Amgen*, 568 U.S. at 466); *Szabo v. Bridgeport Machines, Inc.*, 249 F.3d 672, 677 (7th Cir. 2001) (“A court may not say something like ‘let’s resolve the merits first and worry about the class later.’”).

of a conspiracy as the overriding issue even when the market involves diversity in products, marketing, and prices.”); *Amchem Prods., Inc. v. Windsor*, 521 U.S. 591, 625 (1997) (“Predominance is a test readily met in certain cases alleging consumer or securities fraud or violations of the antitrust laws.”).

*ii. Price Impact*

The parties agree that proving antitrust impact under the Sherman Act goes hand-in-hand with proving price artificiality under the CEA. *See* [352] at 38, *and* [311] at 33–34. Plaintiff relies on Pirrong’s price-impact model to establish causation under the substantive causes of action. *See* [311] at 38–43.

To succeed on the price-fixing and manipulation claims, Mish must demonstrate a causal link between defendants’ trading conduct and the price depression. *See Mish I*, 596 F.Supp.3d at 1091–92, 96 (“[A] price may be artificial if it is higher than it would have been absent [defendants’] conduct.”) (citation omitted); *Greater Rockford*, 998 F.2d at 401 (“An antitrust violation need not be the sole cause of the alleged injuries, but the plaintiff must establish, with a fair degree of certainty, that the violation was a material element of, and substantial factor in producing, the injury.”). At the class-certification stage, however, the inquiry is not whether plaintiff has proven that causal link, but “whether the class can point to common proof that will establish antitrust injury... on a classwide basis.” *Kleen Prods. LLC v. Int’l Paper Co.*, 831 F.3d 919, 927 (7th Cir. 2016); *Messner*, 669 F.3d at 818 (emphasizing that plaintiff’s burden is to “demonstrate that the element of antitrust impact *is capable*

*of proof at trial* through evidence that is common to the class rather than individual to its members”) (emphasis in original).

Defendants and their expert present a competing view that physical storage constraints better explain market volatility and price depression on April 20. [352] at 14–17; [355] at 22–26. Hendershott explains the “predominant view” shared by “market participants, regulators, academics, and other informed observers” that market conditions were the driving factor for the price depression, not alleged manipulation by futures traders. [356-2] ¶ 12. Defendants Vega and Adrian Spires separately belabor this point, citing press releases from Shell and BP to assert that “the world’s major oil companies consistently explained that natural forces of supply and demand were driving the price of the May WTI Contract.” [359] at 20 (Vega’s and Spires’s supplemental brief). Note that a competing *view* is all that’s presented for now. *See* [386-7] 338:16–18 (Hendershott disclaiming an “affirmative opinion that the decline was caused by the storage situation”). Moreover, Mish doesn’t need an expert to present the strict “but-for” analysis demanded by defendants to meet its burden at this stage. “[A]n expert construction of a hypothetical market free of any anticompetitive restraint, to which the actual market can be compared” is “one way in which plaintiff could satisfy its burden [at class certification], but... that formulation is too narrow.” *See Kleen Prods.*, 831 F.3d at 927. If storage constraints and contracting demand for crude oil during the pandemic (as opposed to order imbalances caused by defendants’ trading) *substantially* caused the price declines observed on April 20, then plaintiff’s claim will fail on the merits. *See Greater*

*Rockford*, 998 F.2d at 401. But that question is amenable to class-wide resolution because the “signals” affect market participants alike. *See Schleicher*, 618 F.3d at 686 (explaining that Rule 23(b)(3) certification may be appropriate “even though all statements turn out to have only trivial effects on stock prices”); *cf. Simpson v. Dart*, 23 F.4th 706, 712 (7th Cir. 2022) (finding that district court did not need to consider whether plaintiff’s statistical experts “controlled for racially neutral factors or whether the tests had been validated for use at other departments” because those considerations went to the merits rather than commonality).

That leaves defendants’ *Daubert* challenge to Pirrong’s TVP-VAR model and the “flash crash” opinion (which incorporates artificiality estimates throughout the class period but attributes additional price depression to the trading defendants). Plaintiff contends that Pirrong’s price-impact model and related causation opinions are not necessary to establish predominance. [390] at 41. In *Ploss*, the court declined to rule on the admissibility of Pirrong’s event-study analysis, which the plaintiff offered to prove defendant’s scheme artificially inflated prices and to quantify the impact during the class period. 431 F.Supp.3d at 1015–16, 1021–22. An event study is a regression analysis that seeks to isolate the effect of a certain event on the price of a commodity. *Id.* at 1015. (Pirrong conducts an event-study analysis in this case to show that no other contracts identified in the April 8 CME release as potentially trading negative actually traded at negative prices. *See* [386-1] ¶ 22.) Defendants did not dispute that Pirrong’s event-study methodology could be used to prove artificially inflated prices. *Id.* at 1015–16. Because the plaintiff did not need to prove loss

causation at the class-certification stage, the court deemed it unnecessary to rule on the defendant's motions to exclude Pirrong's testimony. *Id.* at 1021 ("So regardless of whether or not Plaintiffs can ultimately prove causation on the merits using Pirrong's model does not affect class certification.").

Here too, defendants' objections to Pirrong's TVP-VAR model largely implicate merits issues. *See* [355] at 33–37 (seeking to exclude Pirrong's methodology for failing to estimate "but-for" prices, failing to control for alternative explanations,<sup>10</sup> and being "over-parameterized"). Unlike in *Ploss*, however, defendants challenge the TVP-VAR methodology for being novel, untested, and fundamentally unreliable. *See* [355] at 30–31. If Pirrong's model cannot reliably measure price impact, then there is no common methodology to show class-wide injury because there is no methodology at all. *See Am. Honda*, 600 F.3d at 816 ("The court must also resolve any challenge to the reliability of information provided by an expert if that information is relevant to establishing any of the Rule 23 requirements for class certification."). Of course, Rule 23(b)(3) does not require a plaintiff to prove there are common answers to questions, but an expert's methodology that cannot generate an answer for *any* class member cannot carry plaintiff across the class-certification threshold. I address defendants' *Daubert* challenges only to the extent necessary in determining whether Pirrong's

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<sup>10</sup> An expert model that ignores obvious alternative factors may be fundamentally unreliable, but that's different from a model that attempts to account for alternative explanations and is flawed. *See Schultz v. Akzo Nobel Paints, LLC*, 721 F.3d 426, 434 (7th Cir. 2013) ("[A] reliable expert should consider alternative causes, they do not require an expert to rule out every alternative cause."). Pirrong's TVP-VAR model does account for alternatives, though defendants may object to the parameters or variables. *See* [386-2] ¶ 207 (price variations not explained by order flow in the TVP-VAR estimates are attributable to public, non-trade-related information).

TVP-VAR model is capable of reliably measuring price impact on a class-wide basis. See *Schleicher*, 618 F.3d at 685.

Under Federal Rule of Evidence 702 and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), expert testimony is admissible only if relevant and reliable. Rule 702 and *Daubert* require me to evaluate: “(1) the proffered expert’s qualifications; (2) the reliability of the expert’s methodology; and (3) the relevance of the expert’s testimony.” *Gopalratnam v. Hewlett-Packard Co.*, 877 F.3d 771, 779 (7th Cir. 2017). “The focus is on the expert’s methodology, not [their] ultimate conclusions.” *Kopplin v. Wisconsin Cent. Ltd.*, 914 F.3d 1099, 1104 (7th Cir. 2019). My role is to be an evidentiary gatekeeper, determining whether the proposed expert testimony crosses the threshold of admissibility, but I may not take the place of the jury to decide issues of credibility or accuracy. *Artis v. Santos*, 95 F.4th 518, 527 (7th Cir. 2024) (quoting *Lapsley v. Xtek, Inc.*, 689 F.3d 802, 805 (7th Cir. 2012)). If expert testimony crosses the threshold, “[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof” are the appropriate tools to challenge the evidence. *Daubert*, 609 U.S. at 596.

Reliability hinges on “the validity of the methodology employed by an expert, not the quality of the data used in applying the methodology or the conclusions produced.” *Manpower, Inc. v. Ins. Co. of Pennsylvania*, 732 F.3d 796, 806 (7th Cir. 2013). Factors that bear on reliability include: (1) whether the particular theory or technique can be and has been tested; (2) whether the theory has been subjected to peer review and publication; (3) the known or potential rate of error; (4) the existence

and maintenance of standards controlling the technique's operation; and (5) whether the theory or technique is generally accepted in the relevant scientific or expert community. *See Anderson v. Raymond Corp.*, 61 F.4th 505, 509 (7th Cir. 2023).

Defendants place undue weight on the novelty of Pirrong's TVP-VAR model in the market microstructure setting. *See* [355] at 31. They acknowledge that the standard vector auto-regression model is widely used, but they take issue with Pirrong's adaptation, pointing out that the TVP-VAR model hasn't been offered in a commodities-manipulation case or published in a peer-review journal. *See* [356-2] at 573:12–17. But reliability depends on an expert's application of methodology to the specific facts of the case, which requires a deeper look at the underlying principles and theories informing Pirrong's methodology. *See Lapsley*, 689 F.3d at 810 (rejecting defendant's objection to the lack of peer-reviewed publications applying expert's mathematical model and focusing instead on the reliability of the underlying physics principles that "have [long] been used and tested... by physicists and engineers").

Defendants emphasize, and Pirrong agrees, that April 20 was an unusual trading day with uncertain economic conditions during the COVID-19 pandemic. *See* [386-2] ¶ 175 ("The market microstructure theory implies that price impact is likely to change because of the conditions that prevailed on April 20, 2020."). Acknowledging the limitations of the standard VAR model, Pirrong explains the need to estimate a VAR that allows for "intra-day variation in price impacts, price volatilities, and price correlations." [386-2] ¶ 180. Other academics have similarly pressed the need to utilize VAR models that are sensitive to variations during volatile

time periods. *See, e.g.*, Thomas A. Lubik & Christian Matthes, *Time-Varying Parameter Vector Autoregressions: Specification, Estimation, and an Application*, 101 *Econ. Q.* 323 (2015) (“[TVP-VARs] have become an increasingly popular tool for analyzing the behavior of macroeconomic time series... The attractiveness of TVP-VARs is based on the recognition that many, if not most, macroeconomic time series exhibit some form of nonlinearity.”). Defendants suggest the TVP-VAR model is unreliable because Pirrong’s cited literature involves macroeconomic policy rather than market microstructure. [355] at 31. Hendershott applied Pirrong’s VAR equations to the standard VAR model and found the price impact of defendants’ trading activity was “effectively indistinguishable from zero.” [355] at 33 (citing [356-1] ¶¶ 166–71). Defendants’ criticism misses the point. Macroeconomic conditions at play on April 20 are why Pirrong finds it inappropriate to apply the standard model. *See TVP-VARs: Specification, Estimation, and an Application* 323 (example of nonlinearity in macroeconomic time series includes when “[s]tock market indices exhibit occasional episodes where volatility, as measured by the variance of stock price movements, rises considerably”). Like the standard VAR model, however, the TVP-VAR model can be estimated using order flows within short time intervals. [386-2] ¶ 184. Here, Pirrong selected 15-second intervals. [386-2] ¶ 192. Pirrong also compares the use of the TVP-VAR model against alternatives such as a rolling-window estimation and non-overlapping window estimation but concludes that the TVP-VAR is preferable because it does not depend on an arbitrary window size, is less sensitive to outliers, and estimates parameters more precisely. [386-2] ¶ 182

(citing Nikolaos Antonakakis, Ioannis Chatziantoniou, David Gabauer, *Refined Measures of Dynamic Connectedness Based on Time-Varying Parameter Vector Autoregressions*, 13 J. Risk Fin. Mgmt. 84 (2020)). Defendants do not explain why a standard VAR model would be more appropriate to apply in this case, apart from their objections to the “novelty” of the adapted TVP-VAR model. *See Messner*, 669 F.3d at 814 (“The fact that a defendant is not required to present evidence to defeat class certification does not give that defendant license to offer irrelevant and unreliable evidence.”). Based on the unique circumstances that may have affected trading activity on April 20 and Pirrong’s application of generally accepted principles to develop his TVP-VAR model, I am satisfied that Pirrong’s model can reliably measure class-wide price impact.<sup>11</sup>

The substantive question, then, is whether Pirrong’s model suggests that proving price impact will require individual treatment and defeat a finding of predominance. *See In re Hydrogen Peroxide Antitrust Litig.*, 552 F.3d 305, 311 (3d Cir. 2008) (“If proof of the essential elements of the cause of action requires individual treatment, then class certification is unsuitable.”). Defendants argue that plaintiff cannot meet its burden to establish predominance because the price-impact model: (1) does not explain the last six minutes of the class period; (2) does not consider all

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<sup>11</sup> Defendants also object that Pirrong doesn’t provide any statistical error rates, [355] at 36, but Pirrong’s method offers a probability distribution of observing a particular value of artificiality rather than the probability of observing a particular value under a null hypothesis (expressed as a *p*-value). *See* [386-1] ¶¶ 372–74 & n.336.

the relevant trading; (3) and impermissibly includes a high number of uninjured class members. [352] at 40–45.

Pirrong’s analysis of the last six minutes of the class period incorporates the price impact estimates from the TVP-VAR model from 9:00 a.m. to 1:24 p.m. [386-2] ¶ 31; [386-1] ¶ 402. The purpose of the additional analysis, Pirrong explains, is to estimate the additional amount of artificiality attributable to defendants’ trading in the last six minutes. [386-1] ¶ 402. Again, this portion of Pirrong’s testimony may support but-for causation, but it is not necessary for plaintiff to meet its burden at class certification. *Cf. Kleen Prods.*, 831 F.3d at 927. If Pirrong’s TVP-VAR model fails, then class members who sold during the last six minutes will lose on causation just the same as class members who sold before 1:24 p.m., regardless of the additional artificiality estimates that Pirrong calculated for the last six minutes. *See Tyson Foods*, 577 U.S. at 442 (whether expert’s study was “unrepresentative or inaccurate” was “itself common to the claims made by all class members”). It is enough that plaintiff identifies common proof to establish price impact throughout the class period.

Because Pirrong’s model relied exclusively on CME data, defendants say that individualized inquiries will be required to determine whether a class member was harmed. [352] at 41. Defendants note the possibility that entities traded outside of CME’s Globex platform, the need to aggregate a seller’s trading activity across their accounts to determine if they liquidated a long position, and traders who engaged in hedging and offsets who may have been “unharmed” or benefitted from the price

depression (e.g., traders who sold May Contracts on NYMEX *and* purchased contracts on the Intercontinental Exchange). [352] 41–44. These concerns do not undermine the model’s capacity to measure class-wide injury but touch on the need to conduct individualized damages calculations at a later stage. *See Kohen*, 571 F.3d at 676 (rejecting proposition that a court is “required to determine which class members had suffered damages” as “putting the cart before the horse” in a class action).

More importantly, defendants conflate “harm” in the merits sense with the loss that a class member will have to show to ultimately recover damages. *See id.* (“Some of the class members, discovering that they were not injured at all, will not submit a claim, and others will submit a claim that will be rejected because the claimant cannot prove damages, having obtained off-setting profits from going long.”). They assert that applying Pirrong’s methodology results in 166 out of 1,138 potential class members being “unharmed.” [352] at 45. Defendants get to that number by misapplying plaintiff’s theory of injury. Hendershott excludes accounts that (1) first bought TAS contracts and then sold non-TAS contracts and (2) bought and sold an equal number of TAS contracts. [352] at 45 n.28. Both these groups are still harmed because they sold May Contracts at an artificially low price, even if the first group emerged better off by virtue of the lower settlement price on April 20 and the second group was left no worse off by the offsetting gains from purchasing contracts. *Cf. Kohen*, 571 F.3d at 679 (“The plaintiffs sold short, so, prima facie at least—being forced as they were to [cover]—they were injured if the price of cover was artificially inflated during the period between their sale and the delivery date.”). If the class

succeeds in proving artificial prices, then these members may not recover anything because they cannot identify losses. That is part and parcel of administering class recovery; it is not an obstacle to class certification.

In sum, Pirrong’s TVP-VAR model is capable of resolving the common question of price impact in “one stroke,” and this common question predominates over any individualized inquiries. *See Wal-Mart v. Dukes*, 564 U.S. at 350.

*iii. Damages*

“It is well established that the presence of individualized questions regarding damages does not prevent certification under Rule 23(b)(3).” *Messner*, 669 F.3d at 815 (7th Cir. 2012) (citing *Wal-Mart v. Dukes*, 564 U.S. at 363). The question is whether “there is a classwide method for proving damages, and if not, whether individual damage determinations will overwhelm the common questions on liability and impact.” *Kleen Prods.*, 831 F.3d at 929 (citing *Comcast*, 569 U.S. at 34).

Plaintiff proposes a method of calculating damages based on artificiality estimates from Pirrong’s price-impact model—the difference between the amount of “artificiality paid” and “artificiality received” for each purchase and sale of a May Contract. [311] at 45; [386-2] ¶¶ 393–94. It only measures loss corresponding to plaintiff’s theory of price artificiality. *See Comcast*, 569 U.S. at 35 (“[A] model purporting to serve as evidence of damages in this class action must measure only those damages attributable to that theory.”). Applying this formula to Mish’s claim yields a damages calculation of \$36,200. [386-2] ¶ 395. Mish purchased ten contracts at an artificiality equal to negative \$8.51 and sold ten contracts at an artificiality equal to negative \$12.13. [386-2] ¶ 395. Pirrong took the difference, multiplied it by

ten (the quantity of Mish's sell orders) then by 1000 (number of barrels in a contract).<sup>12</sup> [386-2] 395 & n.103; [129] ¶ 77.

Defendants object that this formula is too "simplistic" because it does not account for individual class members' positions and trades, both on and off the Globex platform. [352] at 46–47. These are the kinds of "person-specific issues" that routinely arise in calculating individual damages, and they can be resolved mechanically. See *Schleicher*, 618 F.3d at 681 (calculating when and how many shares an investor purchased or sold and the timing of each class member's transactions can be sorted using a database of time and quantity information). Individualized damages calculations for class members do not make class treatment inappropriate.

#### **E. Superiority**

Class treatment must also be "superior to other available methods for fairly and efficiently adjudicating the controversy." Fed. R. Civ. P. 23(b)(3). Class actions are generally superior when "small recoveries [would] not provide the incentive for any individual to bring a solo action prosecuting his or her rights," see *Mullins*, 795 F.3d at 658, or when collective treatment "would achieve economies of time, effort, and expense, and promote . . . uniformity of decision as to persons similarly situated," *Amchem Prods.*, 521 U.S. at 615.

Defendants argue that Mish's low-dollar claim is unusual, and other class members will likely have significantly larger damages. [352] at 13. Defendants'

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<sup>12</sup> Pirrong's equation contains a typo:  $(\$12.13 - \$8.51) \times 10 \times 100$  does not equal \$36,200. The final factor in the equation should be 1000, not 100, but the damages total accurately reflects multiplication by 1000.

expert identifies damages of \$1.15 billion, “suggesting claims that, on average, exceed \$1 million.” [352] at 49 (citing [356-1] ¶ 263). Plaintiff responds that the “average” value is a poor indicator of claim amounts, instead pointing to median net damages, which shows half the accounts have net damages of less than \$1,200. [390] at 58 (citing [386-1] ¶ 656). Defendants’ math is unconvincing. The average value is a poor proxy for the number of small-value claims, given the presence of large-volume traders that likely skew the number. *See* David H. Kaye & David A. Freedman, *Reference Guide on Statistics*, in *Reference Manual on Scientific Evidence* 238 (Fed. Jud. Ctr. 3d ed. 2011) (“[T]he mean takes into account (indeed, is heavily influenced by) the magnitudes of the relatively few very large awards, whereas the median merely counts their number. If one is seeking a single, representative number for the awards, the median may be more useful than the mean.”). Even if some class members stand to recover large damages, an individual plaintiff may be unwilling to bear the costs of litigation in this case, which involves extensive expert testimony to prove and calculate price artificiality. *See Suchanek v. Sturm Foods, Inc.*, 764 F.3d 750, 760 (7th Cir. 2014) (advising district court to consider that “resolution of the merits may require costly survey evidence and expert testimony” in evaluating superiority); *see also Carnegie v. Household Int’l, Inc.*, 376 F.3d 656, 661 (7th Cir. 2004) (“[A] class action has to be unwieldy indeed before it can be pronounced an inferior alternative—no matter how massive the fraud or other wrongdoing that will go unpunished if class treatment is denied—to no litigation at all.”).

The parties' competing estimates of recovery are not decisive in any event. Even if some of the class members' claims may be worth enough to pursue individually, common questions are a reason to find a class action superior. *See Messner*, 669 F.3d at 814 n.5 (“[T]he more common issues predominate over individual issues, the more desirable a class action lawsuit will be as a vehicle for adjudicating the [plaintiff's] claims.”). If even a dozen or so putative class members brought individual claims, the same claims and facts would be adjudicated by multiple courts, expending unnecessary time and effort and creating the risk of different outcomes. *See Suchanek*, 764 F.3d at 759. A class action is the superior device to resolve the claims in this case.

Finally, defendants allude to an arbitration provision under NYMEX Rule 600.A.1 for “disputes among members.” *See* [352] at 50 n.29; [361] (letter requesting plaintiff to arbitrate its claims). That's not a developed argument. *See Gross v. Town of Cicero, Ill.*, 619 F.3d 697, 705 (7th Cir. 2010) (perfunctory and undeveloped arguments are waived). Nor is it clear that the arbitration provision would even apply to Mish's or other class members' claims. *See* CME Group, Chapter 6: Arbitration, in *Rulebook*, <https://www.cmegroup.com/rulebook/NYMEX/1/6.pdf> [<https://perma.cc/5D7U-HX3P>] (applying to claims between members relating to the enforceability of non-complete clauses, terms of employment in the Trading Annex, and “financial arrangements relating to the resolution of error trades in Exchange products that are included in an employment agreement”). To the extent that defendants suggest the arbitration provision undermines superiority, it is unavailing.

“[A] smattering of individual contract defenses” arising from forum-selection clauses, jury waivers, and the like do not undermine class certification under Rule 23(b)(3). *Kleen Prods.*, 831 F.3d at 930 (distinguishing class-action waivers that would bar the class-action device from other contractual provisions that may only apply to certain class members). Superiority is satisfied.


#### IV. Conclusion

Defendants’ motion to strike plaintiff’s expert rebuttal reports, [413] and [414], is denied. Defendants’ request for leave to conduct additional discovery in the alternative is denied as unnecessary. Defendants’ motion to exclude Craig Pirrong’s expert testimony, [353], is denied without prejudice to renewal at merits stages.

Plaintiff’s motion to certify the class, [317], is granted. The following class is certified: All persons and entities that sold a May 2020 light sweet crude oil (WTI) futures contract (“May contract”) traded on the New York Mercantile Exchange between 9:00 a.m. CST and 1:30 p.m. CST (inclusive) on April 20, 2020 (including by trade at settlement (“TAS”)), to liquidate a long position in the May contract.

Mish International Monetary Inc., Lovell Stewart Halebian Jacobson LLP, and Miller Law LLC are appointed representatives of the class.

ENTER:

  
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Manish S. Shah  
United States District Judge

Date: June 24, 2025