

No. 25-13631-C

**IN THE UNITED STATES COURT OF APPEALS
FOR THE ELEVENTH CIRCUIT**

CITADEL SECURITIES LLC,

Petitioner,

v.

U.S. SECURITIES AND EXCHANGE COMMISSION,

Respondent.

On Petition for Review of an Order of the
Securities and Exchange Commission

**BRIEF OF BETTER MARKETS, INC., AS AMICUS CURIAE
SUPPORTING RESPONDENT AND DENIAL OF PETITION**

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CERTIFICATE OF INTERESTED PERSONS

Pursuant to Eleventh Circuit Rules 26.1-1 through 26.1-5, amicus curiae Better Markets, Inc. submits the following list of persons and entities with an interest in the outcome of this case:

1. Better Markets, Inc., Amicus Curiae supporting Respondent Securities and Exchange Commission.
2. Citadel Securities GP LLC, indirect, ultimate controlling entity of Citadel Securities LLC.
3. Citadel Securities LLC, Petitioner.
4. Dentons US LLP, counsel for Amici Curiae.
5. Davy, Jim, counsel for Amicus Curiae Better Markets, Inc.
6. Doumani, Tala A., counsel for Intervenor Investors Exchange LLC.
7. Hall, Stephen W., counsel for Amicus Curiae Better Markets, Inc.
8. Hardin, Tracey A., Securities and Exchange Commission Solicitor.
9. Henkin, Douglas W., counsel for Amici Curiae.
10. IEX Group, Inc., parent company of Intervenor Investors Exchange LLC.
11. Investors Exchange LLC, Intervenor.

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12. Kaskel, Jonathan H., counsel for Amici Curiae.
13. Kelleher, Dennis M., counsel for Amicus Curiae Better Markets, Inc.
14. MEMX LLC, Amicus Curiae supporting Petitioner Citadel Securities LLC.
15. NYSE American LLC, Amicus Curiae supporting Petitioner Citadel Securities LLC.
16. NYSE Arca, Inc., Amicus Curiae supporting Petitioner Citadel Securities LLC.
17. Parise, Emily True, counsel for Respondent Securities and Exchange Commission.
18. Richman, Brian A., counsel for Petitioner Citadel Securities LLC.
19. Savitt, William, counsel for Intervenor Investors Exchange LLC.
20. Scalia, Eugene, counsel for Petitioner Citadel Securities LLC.
21. Securities and Exchange Commission, Respondent.
22. Shin, Won S., counsel for Intervenor Investors Exchange LLC.
23. Tienken, John W., counsel for Petitioner Citadel Securities LLC.

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24. Wachtell, Lipton, Rosen & Katz, counsel for Intervenor Investors Exchange LLC.
25. Walker, Helgi C., counsel for Petitioner Citadel Securities LLC.
26. Wolf, Brandon, counsel for Petitioner Citadel Securities LLC.

No publicly traded company or corporation has an interest in the outcome of the case. Better Markets will file an amended certificate of interested persons should it become aware of a change in interests that would affect the disclosures as required by Federal Rule of Appellate Procedure 26.1 and Eleventh Circuit Rule 26.1-4.

CORPORATE DISCLOSURE STATEMENT

Pursuant to Rule 26.1 of the Federal Rules of Appellate Procedure and Eleventh Circuit Rules 26.1-1 and 29-2, Better Markets states that it has no parent corporation and there is no publicly held corporation that owns any stock in Better Markets.

STATEMENT AS TO AUTHORSHIP AND FUNDING

In accordance with Federal Rule of Appellate Procedure 29(a)(4)(E), Better Markets states that (i) no counsel for any party authored this brief in whole or in part; (ii) no party or party's counsel

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contributed money that was intended to fund preparing or submitting this brief; and (iii) no person—other than Better Markets, its members (of which there are none), or its counsel—contributed money that was intended to fund preparing or submitting this brief.

/s/ Jim Davy

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Counsel for Amicus Curiae

Better Markets

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INTERESTS OF THE AMICUS CURIAE

Better Markets is a nonprofit, nonpartisan, and independent organization that promotes the public interest in the financial markets through comment letters on proposed rules, amicus briefs, independent research, public advocacy, and congressional testimony.¹ It fights to protect investors and consumers from fraud and abuse; prevent financial crises; and make the financial system, including the exchanges that are integral to its success, more equitable for all Americans.

Since its founding in 2010, Better Markets has focused a large proportion of its advocacy on the rules and other orders issued by the Securities and Exchange Commission (“SEC”). Better Markets’ work includes nearly 200 comment letters filed with the SEC on a wide range of topics, including complex market structure reforms. Among its advocacy in this area is a comment letter in support of the options trading platform now before this Court (“IEX Options”). *See* Comment Letter from Better Markets, Inc., to the SEC, Release No. 34–103998 (July 18,

¹ Better Markets files this brief with the consent of the Parties.

2025).² Better Markets also filed an amicus curiae brief in support of the D-Limit order, a close correlate of IEX Options that the SEC unanimously approved and the United States Court of Appeals for the District of Columbia Circuit (“D.C. Circuit”) unanimously upheld against challenges similar to those presented here. *See Brief Amicus Curiae, by Consent, of Better Markets, Inc., in Support of Respondent and Intervenor, Citadel Securities LLC v. SEC*, No. 20-1424 (D.C. Cir. Apr. 12, 2021);³ *see generally* www.bettermarkets.org (containing all advocacy materials).

Better Markets has a strong interest in this case. The IEX Options platform is an important market innovation that will substantially improve the fairness and competitiveness of the options markets. It will benefit retail and institutional investors by neutralizing the latency arbitrage strategies that high-frequency trading firms (“HFTs”) deploy to reap unfair, outsized, and virtually guaranteed profits at the expense of other investors. A decision from this Court upholding the SEC’s order approving IEX Options, *see Order Approving a Proposed Rule Change, as*

² Available at <https://bettermarkets.org/wp-content/uploads/2025/07/Better-Markets-Comment-Letter-IEX.pdf>.

³ Available at <https://bettermarkets.org/sites/default/files/Better%20Markets%20Brief%20in%20Citadel%20v.%20SEC.pdf>.

Modified by Amendment No. 3, To Adopt Rules To Govern the Trading of Options on the Exchange for a New Facility Called IEX Options, Release No. 34-103998, 90 Fed. Reg. 45861 (Sept. 23, 2025) (“Order”), will secure the benefits of the innovation, while a decision vacating the Order will perpetuate a harmful and unjustifiable status quo. Better Markets therefore argues in support of the SEC and denial of the petition.

INTRODUCTION

The record in this case shows that today’s options markets are plagued by a number of well-funded HFTs that engage in the unfair practice of latency arbitrage. Using ultra-high speed computer technology, they can identify impending changes in the displayed prices for options before other market participants are able to see those imminent price moves. With this informational advantage, the HFTs can snap up resting offers to buy or sell options at prices that are about to be updated but are momentarily stale. They can then trade out of those positions once the new prices are posted, locking in huge and nearly certain profits for themselves, while depriving market makers and investors of optimal executions. Latency arbitrage in effect allows HFT firms to bet on events when they already know the outcomes, at the

expense of other investors. Petitioner Citadel Securities LLC (“Citadel”) opposes IEX Options because it threatens the firm’s immensely profitable HFT business model.

The technology that intervenor Investors Exchange LLC (“IEX”) has developed will help neutralize these unfair advantages, and the SEC rightly approved it. The SEC appropriately found, based on substantial evidence in the record, that IEX Options was consistent with the requirements in the Securities Exchange Act of 1934 (“Exchange Act”) governing exchange rules, 15 U.S.C. § 78f(b); was not unfairly discriminatory; and did not impose an unnecessary or inappropriate burden on competition. The record also shows that in approving the Order, the SEC engaged in rational rulemaking under the Administrative Procedure Act (“APA”), as it considered all the relevant factors, drew reasonable conclusions, and clearly explained the reasons for its action. *See generally Motor Vehicle Mfrs. Ass’n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983). The Court should deny the petition for review and allow IEX Options to enhance the quality of options trading for the benefit of all investors.

STATEMENT OF THE ISSUES

Whether the SEC’s approval of IEX Options complied with the Exchange Act and the applicable requirements governing agency decision-making under the APA.

SUMMARY OF ARGUMENT

Latency arbitrage has long been present in the equities markets, and years of analysis by the SEC, academics, and other experts have confirmed its harmful impact. The record in this case shows that latency arbitrage by HFTs is also pervasive and harmful in the options markets. It is forcing market markers to widen spreads, reduce the number of quotes, or abandon the markets altogether, thus reducing depth, liquidity, and optimal pricing for investors. While petitioner Citadel attempts to cast doubt on the very existence and impact of latency arbitrage in options trading, its arguments are legally and factually meritless. The HFTs’ “peek and cheat” strategy is prevalent in both equities and options trading, and it has no valid justification in either marketplace.

The record is equally clear that IEX Options is an appropriate innovation that will help neutralize the unfair advantages at the heart of

the HFTs' business model. IEX's automated "options risk parameter" ("ORP") technology scans the market and identifies situations where options prices have become significantly dislocated from the prices of their underlying securities—circumstances that portend likely price changes and instantly attract opportunistic HFT traders. During the brief periods throughout the trading day when the system detects those dislocations, it can either update or cancel orders, in accordance with market makers' instructions. A modest speed bump of 350-microseconds briefly slows down all incoming options orders, enabling the ORP to act before the HFTs can snap up stale quotes.

IEX's platform will benefit both retail and institutional investors. Most immediately, it will encourage greater participation and competition among market makers, which are the lifeblood of the options markets. The result will be more liquidity and better prices for the benefit of all investors. Ultimately, IEX Options will prevent HFTs from unfairly bleeding away investors' funds through technological advantages that are divorced from fundamental analysis of corporate value, rational capital allocation, or investment acumen.

Citadel’s attempt to cast IEX Options as simply a boon for IEX’s revenues is flatly contradicted by the record. IEX Options is carefully designed to operate only when HFTs are poised to exploit other investors by racing to snap up stale orders. The system will thus improve the fairness of the options markets without discriminating in favor of IEX’s members or any other market participants. Its purpose is to unrig the markets, not bestow benefits on any particular class of market participant.

Finally, the benefits of IEX Options—and its compliance with the Exchange Act and the APA—find additional support in the history of IEX’s closely related remedy for latency arbitrage in the equities markets, the D-Limit order. The SEC approved that order type in 2020, *see* Securities Exchange Act Release No. 89686 (Aug. 26, 2020), 85 Fed. Reg. 54438 (Sept. 1, 2020) (SR-IEX-2019-15) (“D-Limit Order”), and the D.C. Circuit unanimously upheld the SEC’s decision in 2022, *see Citadel Securities LLC v. SEC*, 45 F.4th 27 (D.C. Cir. 2022) (“*Citadel I*”). IEX Options is essentially identical to the D-Limit order in terms of both its purposes and mechanics. Accordingly, the Court should approve IEX’s

latest effort to make our markets fairer, for essentially the same reasons that the SEC approved and the D.C. Circuit affirmed the D-Limit order.

ARGUMENT

- I. Latency arbitrage is prevalent and harmful in both the equities and the options markets, and Citadel's attempt to deny that it exists has no merit.**
 - A. Latency arbitrage is an established and unfair practice in the equities markets.**

Latency arbitrage has been a feature in the equities markets for years. Traders deploying the strategy have been exploiting the unavoidable delay between the moment an order is transmitted to a public exchange and the moment the order is reflected in the national best bid/offer. This delay presents an immensely profitable trading opportunity for anyone who can access pricing data faster than the data are reflected in the national best bid/offer. HFTs have this informational advantage, and it allows them to quickly trade at favorable, hidden prices before prices are updated and displayed, thus guaranteeing a profit.

There is abundant evidence of this practice and its damaging impact. For example, in 2020, the SEC analyzed the extensive use of latency arbitrage in the equities markets and the harm it does to investors' execution quality. Those findings served as the basis for the

SEC’s approval of IEX’s D-Limit order, which IEX designed to counteract the unfair advantages that latency arbitrage confers on HFTs. *See D-Limit Order.*

Citadel challenged the SEC’s D-Limit Order in court, but the D.C. Circuit readily rejected that challenge in 2022. *See Citadel I*, 45 F.4th 27. The Court briefly described the practice of latency arbitrage in the equities markets: “[C]ertain high-frequency traders can take securities at old, stale prices—just before updated prices reach the exchanges—and then turn around and trade those securities at the newly updated national best bid or offer. That practice is called ‘latency arbitrage.’” *Id.* at 30-31. The Court went on to hold that the SEC’s approval of IEX’s antidote to latency arbitrage in the equities markets complied with both the Exchange Act and the APA. *See Citadel I*, 45 F.4th at 34, 38.

In addition to the SEC and the D.C. Circuit, independent experts have extensively studied the deleterious impact of HFT on fundamental fairness, competition, and even efficient capital formation in the equities markets. For example, one analysis focused on the inherently predatory nature of the practice. It explained that HFTs trade “in the sub-second time windows between when market prices move and when market

makers update their quoted prices.” Kristin N. Johnson, *Regulating Innovation: High Frequency Trading in Dark Pools*, 42 J. Corp. L. 833, 860 (2017) (quoting Matt Prewitt, *High Frequency Trading: Should Regulators Do More?*, 19 Mich. Telecomm. Tech. L. Rev. 131, 136 (2012)).⁴ With that capability, they can trade at one price knowing what the stock’s next price will be. They “profit at the slower traders’ expense,” *id.*, and that enables them to “transfer wealth from retail investors to themselves,” Jonathan R. Macey, *Securities Regulation and Class Warfare*, 2021 Colum. Bus. L. Rev. 796, 823 (2022).⁵

Other studies have focused on the singularly harmful impact of latency arbitrage on retail investors. For example, one recent study sought to “explore the multifaceted impacts of HFT on financial stability and small investor welfare.” Anuj Kumar Shah, *How high-frequency trading affects market stability and small-investor welfare*, 10 Int’l J. of Social Impact 73, 76 (2025).⁶ “By analyzing how HFT affects market

⁴ Available at https://jcl.law.uiowa.edu/sites/jcl.law.uiowa.edu/files/2021-08/Johnson_Final_Web.pdf.

⁵ Available at <https://journals.library.columbia.edu/index.php/CBLR/article/view/8638>.

⁶ Available at <https://ijsi.in/wp-content/uploads/2025/07/18.02.013.20251003.pdf>.

access and returns for retail participants, the study aims to assess whether the technological arms race in trading disadvantages the very investors financial markets are designed to serve.” *Id.* The results confirm the damage done to retail investors, showing that “small investors face considerable disadvantages due to latency arbitrage and information asymmetry introduced by HFT,” particularly including “adverse price execution.” *Id.* at 80.

Additional studies spanning the past decade confirm that latency arbitrage also has an anti-competitive impact and can thereby degrade efficient capital formation. Market participants must contend with “increased participation costs” as they seek to compete in the arms race prompted by HFT trading strategies. Yesha Yadav, *How Algorithmic Trading Undermines Efficiency in Capital Markets*, 68 Vand. L. Rev. 1607, 1661 (2015).⁷ These costs have led major market participants to “take their business to trading venues free from competition from HFT traders.” *Id.* at 1661-62. The “technological and real estate advantages needed to successfully compete in the HFT space” mean that a

⁷ Available at <https://scholarship.law.vanderbilt.edu/vlr/vol68/iss6/3/>.

“consolidation of trading amongst a small number of market players” is not surprising. Hilary J. Allen, *The SEC as Financial Stability Regulator*, 43 J. Corp. L. 715, 747 (2018).⁸ “Slower traders feel that they cannot hope to compete with [faster] traders for the best trades, leading to the belief that there is a two-tiered market. . . .” Steven McNamara, *The Law and Ethics of High-Frequency Trading*, 17 Minn. J.L. Sci. & Tech. 71, 144-45 (2016).⁹ The thinning of informed but technologically disadvantaged traders from the market not only harms investors, it also makes prices less reflective of economic fundamentals. That means latency arbitrage “imposes serious costs on the major function that securities markets perform: allocating capital efficiently and productively across the real economy.” Yadav, *supra*, at 1670.

Researchers have also examined ways to combat these harms. One study found that “restricting latency arbitrage improves liquidity” Chengcheng Qu, *Latency Arbitrage and Market Liquidity*, Stockholm

⁸ Available at https://jcl.law.uiowa.edu/sites/jcl.law.uiowa.edu/files/2021-08/Allen_Final_Web.pdf.

⁹ Available at <https://scholarship.law.umn.edu/cgi/viewcontent.cgi?article=1001&context=mjlst>.

Bus. Sch., Stockholm Univ. (Dec. 14, 2022).¹⁰ The study evaluated the effects of a complete *ban* on proprietary traders' taking liquidity (i.e. snapping up offers to buy or sell securities from liquidity providers), but its conclusions also support speed bumps so that "liquidity providers have sufficient time to revise stale quotes . . ." *Id.* at 1. The findings showed that a ban on aggressive proprietary trading caused bid-ask spreads to decline by 11% and adverse selection costs to decline by 21%—i.e. prices improved and informational advantages declined. *Id.* at 1-2. The study concluded that "restricting fast arbitrageurs from taking liquidity protects liquidity suppliers from being sniped and mitigates adverse selection costs, hence improving market liquidity." *Id.* at 2; *see also* Shah, *supra*, at 81 (highlighting the benefits of speed bumps to ensure fairer executions).

Finally, while estimates vary as to the magnitude of the wealth transfer that HFTs cause, in just in the equities markets it amounts to at least billions of dollars a year. An early study found the total profit potential from latency arbitrage opportunities in S&P 500 ticker symbols

¹⁰ Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3799550.

was over \$3 billion in 2014. Elaine Wah, *How Prevalent and Profitable are Latency Arbitrage Opportunities on U.S. Stock Exchanges*, BlackRock, Inc., at 1 (Feb. 8, 2016).¹¹ A more recent study concluded that latency arbitrage practices cost investors an average of \$5 billion per year. J.W. Verret, *Efforts to Sue the SEC over Broker-Inducement Regulation Unlikely to Succeed*, 17 Ohio St. Bus. L.J. 180, 202 (2023).¹² One study found the potential profits from latency arbitrage to be much higher. Alexander Abedine, *The Symbiosis of High Frequency Traders and Stock Exchanges: A Macro Prospective*, 14 N.Y.U. J.L. & Bus. 595, 617 (2018).¹³ Regardless of the precise amount, and judging from the experience in the equities markets, latency arbitrage is a highly profitable scheme that comes at the expense of other investors.¹⁴

¹¹ Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2729109.

¹² Available at <https://kb.osu.edu/server/api/core/bitstreams/121116da-c45c-49e1-8c3b-2f7eceac5ffe/content>.

¹³ Available at https://www.nyuylb.org/_files/ugd/716e9c_71de7a05f3444d4ea23c21da3ae21258.pdf.

¹⁴ Latency arbitrage is as close to a riskless strategy as one can find in the equities markets. Cf. Yesha Yadav, *Insider Information and the Limits of Insider Trading*, 56 Wash. U. J.L. & Pol'y 135, 146 (2018), available at <https://scholarship.law.vanderbilt.edu/faculty-publications/888/> (noting HFT firm Virtu, a public company, had enjoyed a nearly

B. Latency arbitrage is equally pervasive, if not more so, in the options markets, and it victimizes market makers and investors.

The Order sets forth persuasive and substantial evidence that HFTs deploy latency arbitrage extensively in the options markets and that it inflicts considerable harm on market makers and investors. The latency arbitrage mechanism is fundamentally the same in the options markets as it is in the equities markets. Because market makers are the “the primary liquidity providers of displayed quotes for options,”¹⁵ they experience the most direct effects of latency arbitrage. The Order explains that market makers suffer significant economic losses “when they are unable to update the quoted price of their options derivative securities to correspond to a change in the price of the underlying security because a faster market participant is able to execute against the old

“flawless winning streak over four years of operation, losing money on just a single day during this period”).

¹⁵ See Sandor Lehoczky *et al.*, *Dead Man’s Switch: Making Options Markets Safer with Active Quote Protection*, 2, Jane St. Grp. (May 2020), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3675849 (explaining that options markets “depend especially on market makers—who account for 99.9% of open orders—to connect buyers and sellers”).

“stale” price before the market maker can update it.” Order, 90 Fed. Reg. at 45871.

The Order further explains that the “existence of this problem is uncontroverted and supported by numerous options market makers that submitted comment letters describing how latency arbitrage is a problem that negatively affects them.” *Id.* at 45872.¹⁶ For example, according to one market maker, it has been forced to “add tremendous complexity to combat predatory latency arbitrage,” and that “if our systems are too slow (for example, more than a millionth of a second reaction time), then our quotes are traded before the exchange can process our updates. . . these trades happen very frequently and, in the aggregate, are very costly.” *Id.* at 45877 (citing Maven letter at 1–2).

When market makers are forced to quote wider spreads, or stop participating in the options markets altogether, investors suffer. Those inevitable responses to latency arbitrage mean less competition, less aggressive pricing, and less liquidity, all of which hurt investors. One options market maker explained that the “technological arms race”

¹⁶ See generally Comments on IEX Rulemaking, SEC, available at <https://www.sec.gov/comments/sr-iex-2025-02/sriex202502.htm>.

instigated by HFTs, with its attendant risk of adverse price selection and increased infrastructure cost, is “a direct cause of market makers’ quoting wider spreads and/or smaller size in order to generate sufficient risk-adjusted returns—thereby increasing costs for investors.” *Id.* at 45875 (citing CTC letter at 2). IEX noted that the “burden on liquidity provision has contributed to a sharp decrease over time in the number of competing market makers.” *Id.* (citing IEX Response I at 5-6). That has reduced competition and “contributed to a decrease in displayed liquidity per instrument, while market maker spreads have nearly doubled in the past decade.” *Id.* Another commenter, a former market making firm, stated that it was “ultimately forced to exit the business due to the escalating costs and arms race associated with maintaining latency competitiveness.” *Id.* at 45877 (citing Volant letter at 1). In short, retail and institutional end users are “paying the price in the form of wider than necessary spreads and less available liquidity.” *Id.* (citing Maven letter at 2).

The record also shows that the options markets are uniquely vulnerable to latency arbitrage. First, as IEX explained, “the fact that standardized options must be traded on exchanges reinforces the point

that in options, market makers have even more significant need for protection from latency arbitrage strategies because they cannot avoid them through other venues whose design limits the effectiveness of such strategies.” *Id.* at 45875 (citing IEX Response I at 21-22). Second, the sheer number and variety of options relative to equities creates heightened challenges and risks for market makers. They face the daunting task of continuously updating quotes “across hundreds or thousands of series as underlying stock prices change, creating numerous opportunities for latency arbitrageurs to exploit temporary pricing misalignments where [a] single movement in an underlying stock can trigger arbitrage opportunities across multiple strikes and expirations, multiplying the potential for systematic adverse selection.” *Id.* at 45874 (citing Verret letter at 10).¹⁷ Based on this evidence, the SEC appropriately found that the problem of latency arbitrage “is especially acute for options compared to equities.” *Id.* at 45875; *see also Protecting Liquidity in Options Markets*, Market Structure, Optiver (July 12, 2023)

¹⁷ See Order at 70, n.176 (citing IEX’s proposed rule change for IEX Options and noting the approximately 1.5 million listed options series compared to the approximately 11,000 listed equity securities).

(explaining that market makers face excessive risks from maintaining hundreds of quotes on a single underlying security at any one time).¹⁸

C. Citadel’s claim that the SEC has failed to establish a problem requiring a solution is meritless.

Citadel claims the record in this case fails to establish that latency arbitrage even exists in the options market or causes any harm, contending that the Order sets forth no data or empirical analysis to that effect. Petitioner’s Br. at 17, 40-43. Citadel also attempts to distinguish this case from the prior approval of IEX’s similar innovation in the equities markets, the D-Limit order. *See Citadel I*, 45 F.4th 27. It claims that the record in that case included more persuasive “empirical” evidence of latency arbitrage in the equities markets. Petitioner’s Br. at 17, 41.

This attack on the evidentiary basis for the SEC’s Order lacks merit for numerous reasons. First, Citadel’s legal premise is wrong. The courts have made clear that agencies “need not—indeed cannot—base [their] every action upon empirical data.” *Nasdaq Stock Market LLC v. SEC*, 38

¹⁸ Available at <https://optiver.com/insights/protecting-liquidity-in-options-markets/>.

F.4th 1126, 1142 (D.C. Cir. 2022) (quoted authorities omitted). An agency's exercise of its authority "does not turn on the agency's ability to procure specific types of data in a given case." *Cboe Global Markets, Inc. v. SEC*, 155 F.4th 704, 722 (D.C. Cir. 2025). Rather, agencies may, and generally do, act on the basis of many other sources, including input from commenters, experience, and informed conjecture. *Id.* at 720-21; *cf. Black Warrior Riverkeeper, Inc. v. U.S. Army Corps of Engineers*, 833 F.3d 1274, 1285 (11th Cir. 2016) (judicial deference under APA extends to agency's assessment of the amount of data necessary to fully address an issue). To the extent petitioner contends it was the SEC's duty to prepare its own studies, the APA "imposes no general obligation on agencies to conduct or commission their own empirical or statistical studies." *Cboe Global Markets, Inc.*, 155 F.4th at 723 (quoting *FCC v. Prometheus Radio Project*, 592 U.S. 414, 427 (2021)).

Second, regardless, Citadel is factually incorrect. The record in this case is at least as robust as it was in *Citadel I*. In both cases, the SEC relied on a combination of data analysis, comment letters, and other factors to approve IEX's innovations. In *Citadel I*, the D.C. Circuit readily rejected Citadel's challenges to the D-Limit order, holding that the SEC's

approval was supported by substantial evidence and was reasonable and reasonably explained. *Citadel I*, 45 F.4th at 38. The SEC had relied in part on data from IEX showing that the D-Limit order benefits “all market participants” by narrowly targeting and thwarting latency arbitrage. *Id.* at 34. But it also had relied extensively on comment letters. *See id.* at 274 (citing to “dozens of commenters” to support findings that only HFTs have the technology to target certain key moments of price instability); *see also id.* at n.5 (citing the SEC’s reliance on “commenters’ statements” regarding the prevalence of certain order routing practices).

Similarly, the record here includes both data analysis and input from a large and diverse group of commenters showing that latency arbitrage exists in the options markets and that it inflicts considerable damage on market makers, the quality and depth of options pricing, and ultimately, investors. With respect to empirical evidence, the SEC relied in part on data supplied by IEX estimating the small percentage of the trading day during which the ORP would operate to counteract latency arbitrage. Order, 90 Fed. Reg. at 45881. The SEC found this data to be “relevant and persuasive,” *id.* at 45882, as it showed “that the ORP will not be overbroad in its application and, as explained above, generally

should not affect market participants not engaged in latency arbitrage,” *id.* But as discussed above, the SEC also relied heavily on comments from a wide variety of market participants, notably including market makers with first-hand knowledge of today’s options markets and the ways in which latency arbitrage adversely affects those venues and investors. *See also Cboe Global Markets, Inc.*, 155 F.4th at 721, 723 (upholding SEC rule on minimal pricing increments and access fees and observing that SEC was “entitled to conduct a general analysis based on informed conjecture” as well as “experience” and “industry comments”) (quoted authorities omitted).

Finally, Citadel’s own attempt to cast doubt on the existence of latency arbitrage in the options market lacks any support whatsoever. Citadel offers no evidence or authority to substantiate its insinuation, nor does it actually deny that latency arbitrage exists in the options market. That stands to reason, because Citadel knows better. It participates extensively in the options markets, thoroughly understands its dynamics, and acts as an HFT. *See* Petitioner’s Br. at 7 (describing Citadel as “one of the largest participants in the options market”); Citadel homepage (touting the firm as the “#1 U.S. retail options market

maker¹⁹); *Citadel I*, 45 F.4th at 32 (describing Citadel as a “high-frequency trader”).

In the end, Citadel implicitly concedes the existence of latency arbitrage in the options markets. It ultimately retreats to the position that market makers can always “address latency risk” by acquiring the faster data feeds and computer technology necessary to compete with and fend off the HFT traders. Petitioner’s Br. at 18, 24. That catch-me-if-you-can argument is simply an insistence on the unfair status quo.

II. IEX Options will help neutralize the harmful effects of latency arbitrage in the options markets without unfairly discriminating against any market participants.

A. IEX Options will help level the playing field among market makers and improve competition, liquidity, and pricing in the options markets, for the benefit of investors.

The record establishes that IEX Options will effectively counteract the unfair advantages that HFTs have in the options markets. As the SEC explained, the ORP will identify moments when the pricing of a particular options series is sufficiently “dislocated” or divorced from the

¹⁹ Available at <https://www.citadelsecurities.com/what-we-do/options/> (last accessed Feb. 5, 2025).

price of the underlying security to indicate that the pricing for the options is likely to be in transition. Order, 90 Fed. Reg. at 45866-69. In those situations, where quotes have become stale in relation to the underlying securities, the automated system will, as appropriate, cancel or adjust pending quotes. *Id.* To ensure that the ORP can act before HFTs trade against stale quotes, the system will employ “a hardware-based latency mechanism that adds 350 microseconds of additional latency to each incoming order and quote message from any [u]ser, like it does for its equities platform.” *Id.*

The innovation protects market makers from HFTs seeking out and executing their quotes at stale prices. That protection will incentivize market makers to provide tighter and deeper price quotes on IEX, for the benefit of all investors. As the SEC found, if the system attracts more market makers to quote on its platform, then “that additional liquidity, at potentially better prices if a market maker decides to quote more aggressively given the protection against latency arbitrage the ORP provides, will be available to all investors.” *Id.* at 45872.

Commenters, including options market makers as well as institutions that trade on behalf of investors, strongly supported these

benefits. Several pension plans and institutional investors stated that IEX's proposal "will result in fairer and more efficient options markets by reducing barriers to entry and encouraging price competition" that "directly benefits investors." *Id.* at 45876 (citing joint letter from eight pension funds at 2). Three market makers commented that the ORP will allow a larger universe of market makers to participate on IEX and provide liquidity on the basis of price competitiveness rather than speed. *Id.* at 45876-77 (citing letters from HAP Trading, CTC, and All Options USA LLC). One of them explained that "[b]y reducing the advantage of speed, it broadens access to a wider range of liquidity providers, resulting in deeper markets and tighter spreads" and "[c]rucially, it enables new market maker entrants like ourselves to participate on the basis of price competitiveness rather than speed alone." *Id.* at 45876 (citing All Options letter at 1).

Another market maker commented that options exchanges "continue to be characterized by a race for speed as desired by the largest market participants to increase their internalization, reduce existing competition, and prevent new entrants." *Id.* at 45876-77 (citing HAP Trading letter at 3). The commenter stated that it "has firsthand

experience with this market evolution and our firm's ability to improve markets and stay on the inside of the market have been reduced significantly over the last decade." *Id.* The commenter further stated that "IEX is proposing a new model which seeks to cap the technical costs of speed and encourage new market-making participants to compete on price and size rather than speed," which "would cause us to reinvest in our competitive quoting efforts, set more new NBBOs, and spend more time using our quote to augment available liquidity at the inside of the market." *Id.*

IEX summarized the core benefits of its options platform. It explained that the ORP is "narrowly-targeted" to "limit costs from latency arbitrage," which "can help to induce market makers to compete in more options classes, potentially with greater size and tighter spreads." *Id.* at 45877 (citing IEX Response I at 9). In turn, "[t]hese are all effects that benefit public investors and other participants by increasing liquidity and improving price and choice in options markets." *Id.*

B. IEX Options is designed not to confer special advantages on any market participants, but solely to neutralize the HFTs' abusive practices.

Citadel attempts to portray IEX Options as unfair and discriminatory, claiming that it is designed principally to increase IEX's revenues. Petitioner's Br. at 3, 13, 30-39. This attack is baseless. The record makes clear that the purpose of the IEX Options platform is to neutralize the unfair advantages that HFTs enjoy by virtue of their technological capabilities. Leveling an unlevel playing field is not dispensing favors.

The carefully designed features of IEX Options confirm its limited remedial objective. As explained in the Order, the system is designed to operate during an exceedingly small portion of the trading day, and only at those times when HFTs are poised to exploit periods of significant price transition:

IEX "estimates that the ORP would impact IEX Market Maker quotes on average per series significantly less than 0.001% of the trading day during regular trading hours. In light of these results, IEX concluded that the ORP "is designed to be nearly imperceptible to all market participants who are not specifically seeking to engage in latency arbitrage. . . ."

Order, 90 Fed. Reg. at 45881; *see also id.* at 45871 (“market participants that are not engaging in latency arbitrage trading strategies are unlikely to be seeking to trade with the quote precisely when it is in the process of being repriced”). The SEC correctly concluded that the platform is designed only to address latency arbitrage: “IEX’s analysis clearly shows that the ORP will not be overbroad in its application and, as explained above, generally should not affect market participants not engaged in latency arbitrage.” *Id.* at 45882.

Citadel’s claim of unfairness is also belied by the mechanics of the platform. The system is fully automated and transparent. As explained in the Order, *id.* at 45871-72, the ORP will operate without the exercise of any judgment or discretion on the part of IEX or any market makers. The entire process “is governed by the formula and methodology contained in the rulebook which is fully transparent to the public and can only be changed through a proposed rule change filing.” *Id.* at 45872.

Citadel is wrong on yet another ground. IEX Options is focused on market makers not to favor them but because, in the options market, they are the primary sources of liquidity and they bear, by far, the greatest risk of loss arising from HFTs’ predatory trading strategies. The Order

explains that market makers are subject to continuous quoting requirements and that they must maintain hundreds or even thousands of quotes on options for an underlying security at a time. *Id.* at 45878. As a result, “[s]udden market moves in the securities underlying their quoted options can leave them vulnerable to latency arbitrage if they cannot adjust quotes quickly enough to reflect the price changes of the underlying securities.” *Id.* The Order further explains that “this potential for major losses resulting from latency arbitrage can cause options market makers to be less willing to quote their best possible price in the largest number of contracts they might otherwise display . . . [and] can lead to market makers decreasing the number of options classes that they quote or leaving the business entirely.” *Id.* Preventing these outcomes is especially vital because the options markets depend on market makers “to set prices and provide liquidity.” *Id.* at 45878; *supra* n.9.

Finally, the irony in Citadel’s claim of unfairness should be obvious: It is Citadel that seeks to favor its own highly profitable and unfair competitive advantage by opposing implementation of IEX Options. As one expert pointedly observed:

Citadel’s intensely orchestrated campaign against IEX’s option market proposal has nothing to do with supposed

concerns about fading liquidity or inaccessible quotes, or the welfare of retail investors. It has everything to do with seeking to protect Citadel's dominant position in the listed options space and fending off any changes that threaten it. To do that Citadel relies on a cynical and tired playbook it has tried before, which is rife with deception and hypocrisy.

Etienne Mercuriali, *Citadel routing argument vs IEX “doesn’t hold weight”, academics say*, Global Trading (Sept. 3, 2025).²⁰ IEX Options will significantly reduce Citadel’s competitive advantage. That means less revenue for Citadel, and protecting that revenue is what animates its claims in this case, not concerns over any benefits the system may confer on IEX. Far from being victimized by IEX’s innovation, Citadel is simply being prevented from victimizing others.

In sum, the targeted remedial impact of IEX Options on IEX market makers is commensurate with the heightened risks they take and the unfair advantages that HFTs exploit. For these reasons, the SEC rightly concluded that the “benefits provided to Market Makers by IEX’s proposal are not designed to permit unfair discrimination between customers, issuers, brokers, or dealers. Those benefits are focused and

²⁰ Available at <https://johnlothiannews.com/citadel-routing-argument-vs-iex-doesnt-hold-weight-academics-say/>.

not overbroad and are intended to specifically address the disincentive to be a market maker that latency arbitrage can present to many firms.” Order, 90 Fed. Reg at 45878. And the benefits of the system ultimately accrue to all retail and institutional investors who will see narrower spreads, greater depth, and more fair executions of their options trades.

C. Prior administrative and judicial approval of IEX’s similar remedy for latency arbitrage in the equities market supports the approval of IEX Options.

The SEC’s approval of the D-Limit order in 2020 and the D.C. Circuit’s decision affirming that approval in 2022 support a similar result in this case with respect to IEX Options. The mechanisms of the two platforms are essentially the same. The D-Limit order combined the same technology features at the heart of IEX Options: a 350-microsecond delay on incoming orders, coupled with a mechanism that, during the brief pause, can identify the impending price changes targeted by HFTs and then update stale quotes. As the SEC observed, “IEX already operates its equities market with the exact same access delay and an order type (D-Limit Order) that can be repriced or cancelled by the Exchange.” Order, 90 Fed. Reg. at 45868.

The objectives of the two platforms are also the same. As the Order notes, “The ORP and the access delay are a competitive response from IEX to mitigate competitive imbalances between liquidity providers and latency arbitrage liquidity takers in the same manner as IEX’s D-Limit proposal, which is designed to encourage liquidity provision to the benefit of investors” in the equities markets. *Id.* at 45872-73. In light of these similarities, the SEC approved IEX Options for the “same reasons” it approved the D-Limit order. *Id.* at 45868.

Along the same lines, the D.C. Circuit’s decision upholding the SEC’s approval of the D-Limit order is persuasive authority supporting approval of IEX Options in this case. That Court addressed the same core issues presented here, in the context of the equities markets: whether the SEC’s approval of IEX’s technological innovation comprised of a speed bump coupled with the capacity to update stale quotes, which is narrowly tailored to address the abusive trading practice of latency arbitrage, was consistent with the Exchange Act and the APA. *See Order*, 90 Fed. Reg. at 45879 (observing that “IEX Options presents the same issues that the Commission and the [D.C. Circuit] addressed in the D-Limit matter”). The *Citadel I* Court unanimously upheld the SEC’s

approval of the D-Limit order, finding that it satisfied the Exchange Act and that the SEC's conclusions were reasonable and reasonably explained. *Citadel I*, 45 F.4th at 34, 38.

Finally, the same approach to judicial review is warranted in both cases. In *Citadel I*, the court adhered to the principle that the SEC's "determinations based upon highly complex and technical matters" are afforded "great deference." 45 F.4th at 33 (quoted authorities omitted). That rule applies with the same force here, as the issues surrounding IEX Options and the D-Limit order are equally complex and technical in nature. *See Black Warrior Riverkeeper, Inc.*, 833 F.3d at 1289 (special deference is afforded to an agency's predictive judgments in an area within its special expertise).²¹ All of this regulatory and legal history can serve as a useful guide to this Court as it considers Citadel's petition.

²¹ The prior judgments of the SEC and the D.C. Circuit have been vindicated, as the D-Limit order has created a markedly improved platform for equities trading. "The data regarding [IEX's] analogous equity market innovations is unambiguous: IEX's speed bump and D-Limit order type have increased displayed liquidity, reduced adverse selection, and enhanced price discovery—all while maintaining fair access for legitimate trading strategies." *See* Letter from J.W. Verret to SEC (June 24, 2025), at 1, *available at* <https://www.sec.gov/comments/sriex-2025-02/sriex202502-616487-1808494.pdf>. These benefits have been confirmed by IEX's data analysis. *See* Appendix to IEX letter to SEC

CONCLUSION

The Court should deny the petition for review.

Respectfully submitted,

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(June 19, 2025), available at <https://www.sec.gov/comments/sr-iex-2025-02/sriex202502-615827-1806874.pdf>.

CERTIFICATE OF COMPLIANCE

This brief complies with the type-volume limitation of Federal Rule of Appellate Procedure 32(a)(7) because it contains 6,408 words, excluding the parts of the brief exempted by Federal Rule of Appellate Procedure 32(f). This brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the typestyle requirements of Federal Rule of Appellate Procedure 32(a)(6) because this brief has been prepared in a proportionally spaced typeface using Microsoft Word version 16.105.2 in 14-point Century Schoolbook font.

/s/ Jim Davy

Jim Davy

CERTIFICATE OF SERVICE

I hereby certify that on February 6, 2026, I electronically filed the foregoing brief with the Clerk of the Court for the U.S. Court of Appeals for the Eleventh Circuit by using the CM/ECF system. All participants are registered CM/ECF users and will be served by the CM/ECF system.

I further certify that, if the Court asks for paper copies, I will file them with the Clerk of Court within the time required.

/s/ Jim Davy

Jim Davy