

UNITED STATES OF AMERICA
before the
SECURITIES AND EXCHANGE COMMISSION

In The Matter of the Application of:
SECURITIES INDUSTRY AND FINANCIAL
MARKETS ASSOCIATION
for Review of Actions Taken by Self-Regulatory
Organizations

Admin. Proc. File No. 3-15350
The Honorable Brenda P. Murray,
Chief Administrative Law Judge

POST-HEARING BRIEF OF NYSE ARCA, INC.

Redacted Version For Public Filing

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GLOSSARY OF TERMS

2006 NYSE Arca Rule Change	NYSE Arca Proposed Rule Change, Proposal to Establish Market Data Fees, File No. SR-NYSEArca-2006-21 (May 23, 2006) (NYSE Arca Ex. 11)
2014 Procedures Order	Order Establishing Procedures and Referring Applications for Review to Administrative Law Judge for Additional Proceedings (May 16, 2014) (NYSE Arca Ex. 3)
'34 Act	Securities Exchange Act of 1934, 15 U.S.C. § 78a <i>et seq.</i>
ArcaBook Approval Order	Order Setting Aside Action by Delegated Authority and Approving Proposed Rule Change Relating to NYSE Arca Data, 73 Fed. Reg. 74770 (Dec. 2, 2008) (NYSE Arca Ex. 46)
ArcaBook Filing	Proposed Rule Change by NYSE Arca, Inc. Relating to Fees for NYSE Arca Depth-of-Book Market Data, Release No. 34-63291, File No. SR-NYSEArca-2010-97 (Nov. 9, 2010) (NYSE Arca Ex. 1)
Atradia Report	Atradia Research Study, The Cost of Access to Real Time Pre & Post Trade Order Book Data in Europe (Aug. 2010) (NYSE Arca Ex. 66)
ATS	Alternative trading system
Clark Declaration	Declaration of Colin Clark in Support of NYSE Arca, Inc.'s Opposition to Satisfaction of Jurisdictional Requirement (Aug. 18, 2014) (NYSE Arca Ex. 5)
Commission or SEC	United States Securities and Exchange Commission
DOJ	United States Department of Justice
Dodd-Frank Act	Dodd-Frank Wall Street Reform and Consumer Protection Act, 15 U.S.C. § 78s(b)(3)(A)
Donefer Report	Expert Report of Bernard S. Donefer (March 6, 2015) (SIFMA Ex. 376)
Evans Report	Expert Report of Dr. David S. Evans (March 6, 2015) (SIFMA Ex. 377)

Exchanges	NYSE Arca, Inc. and the Nasdaq Stock Market LLC
Hendershott-Nevo Report	Expert Report of Professor Terrence Hendershott, Ph.D. and Professor Aviv Nevo, Ph.D. (Jan. 26, 2015) (NYSE Arca Ex. 65)
HHI	Herfindahl-Hirschman Index
NBBO	National best bid and offer
<i>NetCoalition I</i>	<i>NetCoalition v. SEC</i> , 615 F.3d 525 (D.C. Cir. 2010)
<i>NetCoalition II</i>	<i>NetCoalition v. SEC</i> , 715 F.3d 342 (D.C. Cir. 2013)
NYSE Arca	NYSE Arca, Inc.
NYSE Arca Pre-Hearing Brief	NYSE Arca's Pre-Hearing Brief (March 27, 2015)
NYSE Arca Sanctions Reply	Reply of NYSE Arca in Support of Motion for Sanctions for Discovery Misconduct (May 11, 2015)
October 2006 Approval Order	Order Approving Proposed Rule Change Relating to NYSE Arca Data, Release No. 34-54597 (filed Oct. 12, 2006) (NYSE Arca Ex. 67)
Ordover Report	Expert Report of Janusz A. Ordover (Jan. 26, 2015) (NQ Ex. 601)
Pre-Decisional Orders	2014 Procedures Order (NYSE Arca Ex. 3), Your Honor's October 20, 2014 Order on the Issues of Jurisdiction and Scheduling, Your Honor's April 20, 2015 Order Denying the Exchanges' Motion to Compel Production of Documents Wrongfully Withheld as Privileged, Your Honor's April 23, 2015 Order Denying NYSE Arca's Motion to Strike the Donefer Report, Your Honor's June 4, 2015 Order on Motion for Adverse Inference, and Your Honor's June 5, 2015 Order on Consent Motion Regarding Exhibits Deemed in Evidence
SIFMA	Securities Industry and Financial Markets Association
SIFMA Application	SIFMA's Application for an Order Setting Aside Rule Change of NYSE Arca, Inc. Limiting Access To Its Services (May 30, 2013) (NYSE Arca Ex. 2)

SIFMA Member Declarations	Exhibits 1-9 to the Brief of SIFMA Regarding Satisfaction of Jurisdictional Requirements (July 28, 2014) (NYSE Arca Ex. 4)
SIFMA Pre-Hearing Brief	SIFMA's Pre-Hearing Brief (March 27, 2015)
SIP	Securities Information Processor
SRO	Self-regulatory organization
Subpoena	Subpoena issued by Chief ALJ Murray to SIFMA (Jan. 5, 2015)
Tr.	Hearing Transcript, April 20-24, 2015

Pursuant to Rule 340 of the SEC's Rules of Practice and the briefing schedule set by Your Honor on April 24, 2015, NYSE Arca respectfully submits this post-hearing brief. For the reasons discussed herein, the SIFMA Application should be dismissed.

PRELIMINARY STATEMENT¹

The SEC concluded that the 2006 NYSE Arca Rule Change satisfied the requirements of the '34 Act so long as the pricing was set pursuant to competitive market conditions. It came to this conclusion after careful consideration, including consideration of all the public comments it received in connection with the rule filing. The D.C. Circuit agreed with this market-based approach in *NetCoalition I*; it remanded only because it concluded the record then before it was insufficient to determine if, as a matter of evidence, the SEC had appropriately applied the market-based approach. The sole issue before this Tribunal is whether the current record satisfies the market-based approach the SEC already has adopted after extensive examination.

The current record provides ample evidence to support the market-based approach. The D.C. Circuit and SEC have set forth a clear roadmap for determining whether NYSE Arca was subject to significant competitive constraints in pricing ArcaBook:

- Are sellers of depth-of-book data subject to competitive constraints? *NetCoalition I*, 615 F.3d at 542-43; 2014 Procedures Order (NYSE Arca Ex. 3) at 5-6.
- Does the risk of a reduction in order flow constrain market data prices? *NetCoalition I*, 615 F.3d at 539-541; 2014 Procedures Order (NYSE Arca Ex. 3) at 5.
- Does "trader behavior" indicate that there are alternatives to purchasing an exchange's depth-of-book data? *NetCoalition I*, 615 F.3d at 543-44; Procedures Order (NYSE Arca Ex. 3) at 5-6.

¹ NYSE Arca incorporates and preserves for further review all arguments and objections NYSE Arca made (i) at trial, (ii) in the briefing that preceded the Pre-Decisional Orders, and (iii) insofar as may be necessary to preserve exceptions to the Pre-Decisional Orders.

Whereas NYSE Arca submitted factual evidence and reports by experts who relied on facts to answer these questions, SIFMA submitted no factual evidence and offered only expert opinions that were not based on facts, statistical analysis, or other independent professional research. But the questions before this Tribunal require the evaluation of facts, not unsupported theories. The record establishes that the answers to the questions before the Tribunal are yes, yes, and yes:

- The DOJ, the primary enforcer of federal antitrust laws, has twice found that exchanges compete with each other for the sale of proprietary market data products. In fact, exchanges face intense competition for the individual products they provide and as multi-product platforms as a whole. As shown by NYSE Arca's witnesses, that competition forces exchanges to keep the overall cost of doing business on their markets low. Otherwise, an exchange will lose business to competing exchanges or alternative trading venues.
- SIFMA members themselves concede the linkage between order flow and market data pricing and that an increase in market data prices can drive a reduction in order flow (and vice versa). One need look no further than [REDACTED], which (i) told Nasdaq that [REDACTED]

[REDACTED] Because SIFMA presented no factual evidence to dispute this or other similar evidence presented by the Exchanges,² the only inference the record permits is that SIFMA members and other market participants can and do route order flow away from exchanges and reduce purchases of depth-of-book data in response to increases in the prices of depth-of-book data.

- The record shows that not everyone needs to purchase depth-of-book data and that customers can substitute across exchanges' depth products and other sources of information. For example, many traders do not buy depth-of-book data at all, many buy depth-of-book data from one exchange and not others, and many traders send orders to alternative trading venues—many operated by SIFMA members—that do not distribute depth-of-book data at all.

None of this is a surprise to SIFMA. SIFMA had numerous opportunities to

² This linkage is also conclusively established by NYSE Arca's fact-supported expert testimony and the testimony of James Brooks (NYSE's Head of Proprietary Market Data), who testified that NYSE Arca must price ArcaBook conservatively to avoid losing both ArcaBook customers and order flow.

present contrary evidence, but it chose not to put in *any* evidence from its own members—a truly remarkable position given the D.C. Circuit’s emphasis on the importance of “trader behavior” (*NetCoalition I*, 615 F.3d at 543-44; 2014 Procedures Order (NYSE Arca Ex. 3) at 5-6) and the fact that SIFMA purports to represent traders. SIFMA’s own experts admit that SIFMA members are uniquely situated to provide critical information related to the depth-of-book products that SIFMA members purchase from exchanges and the substitutability of exchanges’ depth products, but neither SIFMA nor its experts produced such evidence, and SIFMA’s experts ignored the evidence of trader behavior presented by the Exchanges. The record before this Tribunal is sufficient to satisfy the market-based test to be applied here. Because NYSE Arca was subject to significant competitive constraints when it set the pricing for ArcaBook, Your Honor should recommend dismissing the SIFMA Application.

FACTUAL BACKGROUND³

A. Depth-of-Book Data

Whereas “top-of-book” data provide the quantities available at the best offer and best bid prices, an “exchange’s depth-of-book data include the quantity of shares available in all displayed limit orders submitted at prices away from the market, that is, buy orders at prices equal to or less than the best available bid, and sell orders at prices equal to or greater than the best available offer.” Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶ 27. Depth-of-book data “are directly implicated in only a small share of trades (3.3%, according to one academic article) that occurs outside the [NBBO]. For the remaining 96.7% of trades, which occur at or within the NBBO, depth-of-book data are not necessary.” *Id.* ¶ 29; Tr. 24:16-24. SIFMA’s expert agrees that depth-of-book data is not needed by retail investors or most professional traders. Tr. 925:5-

³ For a comprehensive procedural history, *see* NYSE Arca Pre-Hearing Brief at 3-5.

927:3.

All major exchanges now sell real-time depth-of-book data feeds, generally charging a flat access fee as well as additional fees that depend on the number and type of users and how the institution uses the data.⁴ Anyone who wants to buy depth-of-book data can do so, and “the pricing for depth-of-book data is uniformly applied to similarly-situated subscribers; it is not tied (positively or negatively) to where the subscriber routes its order flow. Thus, market participants are free to choose the venues to which they route order flow and from which they buy market data (including depth-of-book data) based on which venues and products provide the best value proposition for them.” *Id.* ¶ 30. The uncontested evidence shows they actively make exactly these choices.

B. Competition Between Securities Exchanges

NYSE Arca is a national securities exchange registered with the SEC. Competition to sell depth-of-book data is one element of the broader platform competition between exchanges, which also includes competition in listing services, order execution services, index services, other data services, and network and data center colocation services. *Id.* ¶¶ 37-38. Exchanges are not solely, or even primarily, data vendors—NYSE Euronext’s⁵ market data revenue, which includes U.S. sales of core and non-core market data products and European sales of market data products, accounted for just 9% of total revenue annually from 2006 through 2013. *Id.* ¶ 39 & Ex. 1. Order execution services accounted for approximately two-thirds of NYSE Euronext’s revenue during the same period. *Id.* In 2012, NYSE Euronext’s revenue from

⁴ *Id.* ¶ 30. Every equity exchange provides a depth-of-book product that competes with ArcaBook on the bases of price and features. NYSE Arca Ex. 89; Tr. 63:9-65:1.

⁵ On occasion this brief refers to families of related exchanges rather than individual exchanges. For example, in 2006, NYSE Arca was an indirect wholly-owned affiliate of NYSE Euronext. NYSE Euronext was acquired by Intercontinental Exchange in November 2013. When this brief refers to NYSE Arca, it means NYSE Arca itself.

all market data products (including core data) was \$348 million; this revenue was dwarfed by almost \$2.4 billion in revenue from transaction and clearing fees. *Id.*

Technical and regulatory changes have intensified competition among and increased fragmentation of U.S. stock exchanges. Advances in telecommunications and computing power have dramatically reduced the cost of entry and have made possible new methods of making markets, faster channels for dissemination of financial information, greater access to exchanges, improved order-routing, and algorithmic trading. *Id.* ¶ 44. Non-exchange electronic trading platforms (ECNs) emerged in the 1990s as alternative trading platforms for institutional investors. Many are owned by SIFMA members. And many of these platforms (such as BATS, Direct Edge, Turquoise, and Chi-X) have gained significant market share from incumbent exchanges. *Id.* In response to these technological changes, the SEC has adopted a number of rule changes to foster competition among trading venues, including the Limit-order Display Rule and the “ECN amendment” to the Quote Rule (1996), Regulation ATS (1998), and Regulation NMS (2006). *Id.* ¶¶ 46-49.

The effect of these changes has been dramatic. Existing exchanges face fierce competition from new entrants, and the share of trading volume of the largest incumbent exchanges has declined by approximately 35 points since 2007. *Id.* ¶ 50. Today approximately a dozen exchanges (including NYSE, NYSE Arca, Nasdaq and several BATS exchanges) compete with a variety of ATSs for trades in the same securities. *Id.* ¶¶ 50-51 & Ex. 2. Some 40% of all trading in equities today occurs on ATSs and not on exchanges. *Id.* at Ex. 2.

C. The 2006 NYSE Arca Rule Change And ArcaBook Approval Order

On March 24, 2006, NYSE Arca informed its customers that ArcaBook would become fee-based effective July 3, 2006 (if approved by the SEC, as the '34 Act then required).

NYSE Arca Ex. 69; Tr. 34:10-35:10; Tr. 1235:12-1242:4. From March 24, 2006 on, subscribers spent money on developers and engineers, installing servers, investing in their networks, purchasing hardware, and creating software to process the ArcaBook data feed, all with the knowledge that NYSE Arca would begin charging for ArcaBook as soon as the SEC allowed it to do so. Tr. 1215:5-25; Tr. 1235:12-1242:4.

In May 2006, NYSE Arca filed the 2006 NYSE Arca Rule Change. The SEC approved the fee changes requested by NYSE Arca in December 2008, and NYSE Arca began charging for ArcaBook in January 2009. The number of accounts taking the ArcaBook data feed declined by approximately 23%, going from approximately 220 accounts to 170 accounts.

NYSE Arca Ex. 1 at NYSE_ARCA_000145; Tr. 66:17-22; Tr. 90:13-22. Currently, [REDACTED] [REDACTED] take the ArcaBook feed. Tr. 48:11-49:6. These subscribers are sophisticated organizations with highly specialized uses for the data, such as high frequency traders and those that redistribute the data for profit. *Id.*

D. The ArcaBook Filing And Subsequent Price Changes

On November 9, 2010, NYSE Arca submitted the ArcaBook Filing at issue in this proceeding. The ArcaBook Filing imposed an access fee of \$750 per month to access the ArcaBook data feed. NYSE Arca Ex. 1 at NYSE_ARCA_000281; Tr. 35:11-36:13; Tr. 1247:9-1248:7; Tr. 1251:12-17. This entitled a subscriber to unlimited internal use of the data feed, including but not limited to non-display uses such as high frequency or algorithmic trading, market making, smart order routing, and the operation of dark pools or competing exchanges.⁶

⁶ *Id.*; Tr. 42:23-44:10. These non-display use subscribers, who use depth-of-book data in computer applications for their own proprietary trading, are generally the biggest users of depth-of-book data. NQ Ex. 615. And those subscribers (such as high-frequency traders) can have a large impact on an exchange's trading volume—they "account for a relatively large volume of orders on the exchanges, and therefore enjoy significant bargaining

To the extent a subscriber wanted to display ArcaBook data to others, as entities like Bloomberg or Thomson Reuters do, the ArcaBook Filing also imposed a monthly fee per display device used. *Id.*; Tr. 36:18-37:3. A professional subscriber could access that display data for \$30 per month, and a nonprofessional subscriber could do so for \$10 per month.⁷

In support of the November 2010 ArcaBook Filing, NYSE Arca submitted hundreds of pages of new evidence showing that competition constrains the pricing for ArcaBook. Contrary to SIFMA's assertion that the ArcaBook Filing disregarded *NetCoalition I* and is "essentially the very same" filing that was at issue in *NetCoalition I* (SIFMA Application (NYSE Arca Ex. 2) ¶ 7), much of the evidence NYSE Arca submitted was not previously before the SEC and was submitted specifically to address questions raised in *NetCoalition I*, including evidence of competitive constraints.⁸ For example, NYSE Arca's data "confirm[] that users of depth-of-book data account for significant trading volume," demonstrating an ability to put downward pressure on prices for data products, and that there was "an immediate and significant reduction in the number of accounts with at least one subscription for ArcaBook after [NYSE

power relative to the exchange operators that supply depth-of-book data." Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶ 33.

⁷ *Id.*; Tr. 37:4-40:11. NYSE Arca does not directly charge nonprofessional users for ArcaBook. A nonprofessional retail investor who wished to access ArcaBook would contact his or her broker-dealer and, if the broker-dealer offered ArcaBook, would view that data on whatever interfaces their broker-dealer created. Tr. 40:24-42:3. NYSE Arca would charge *the broker-dealer* \$10 per month for each display terminal used by retail investors; whether a retail customer pays anything to the broker-dealer for access to ArcaBook data is determined by the customer's contract with his or her broker-dealer. Tr. 42:4-22. Many broker-dealers give their retail customers ArcaBook for free as an incentive to use their services. *See* NYSE Arca Exs. 87, 88, 92, 93.

⁸ SIFMA conflates the fees set for ArcaBook pursuant to the two rule filings with the rule filings themselves. Although the fees set were the same in both filings, the filings are significantly different. It was the later, more substantial record that the SEC had before it when it chose not to suspend the ArcaBook Filing, implicitly finding that the filing was consistent with the Exchange Act. *See* 15 U.S.C. § 78s(b)(3)(C).

Arca] started charging for ArcaBook.” ArcaBook Filing (NYSE Arca Ex. 1) at 13-14 & Ex. 3B.

The ArcaBook Filing also demonstrated that competition for order flow constrains proprietary market data pricing because the more potential customers are exposed to an exchange’s data, the more likely they are to send orders to that exchange. Conversely, if the data pricing dissuades potential customers from looking at the exchange’s data, they are less likely to send orders to that exchange. *Id.* at 15-21. Evidence produced in this proceeding (and not rebutted by SIFMA) confirms that data customers can and do [REDACTED] by sending orders to exchanges with lower market data fees. *See, e.g.*, NQ Exs. 505, 619.

In filings not part of this proceeding, NYSE Arca added a redistribution fee in April 2013 for those users, such as Bloomberg or Thomson Reuters, that redistribute or resell the ArcaBook data feed itself—this charge does not apply to “eyeball” uses. NYSE Arca Ex. 94; Tr. 44:12-45:2. At that same time, NYSE Arca also began charging additional fees for non-display uses of ArcaBook in recognition of the value such uses provide to market participants who use depth data in their computer systems or algorithms. NYSE Arca Ex. 94; Tr. 43:11-23. This price change, like all NYSE Arca price changes, took into account the changing ways in which depth data provides value to customers and the prices that competitors were charging for other depth data products.⁹

E. The Evidence Presented By NYSE Arca

NYSE Arca presented the testimony of James Brooks, Senior Director, Head of Proprietary Market Data for NYSE.¹⁰ Mr. Brooks testified that NYSE Arca faces significant

⁹ NYSE Arca Ex. 94 at NYSE_ARCA_002016-NYSE_ARCA_002018, NYSE_ARCA_002023-NYSE_ARCA_002028; Tr. 43:24-44:6; Tr. 65:2-66:16.

¹⁰ Tr. 18:16-161:2. Mr. Brooks’ testimony was corroborated by Nasdaq witnesses Oliver Albers and Lee Shavel, who provided similar testimony concerning the competitive constraints faced by Nasdaq for its depth products.

competition from other exchanges' depth products, and that NYSE must maintain a sales staff to compete for sales of its proprietary market data products. Tr. 66:23-67:21. NYSE Arca also faces competition from other exchanges for order flow—competition so intense that NYSE Arca pays investors millions of dollars in rebates to attract displayable liquidity. Tr. 31:20-34:9. Mr. Brooks testified that in order to compete effectively and avoid the loss of customers and order flow due to price increases, NYSE Arca charges less than what it thinks its depth data is actually worth. Tr. 65:7-66:16.

Although no SIFMA Member Declarant has ever told NYSE Arca that they could not afford to purchase ArcaBook data (Tr. 78:2-79:7), Mr. Brooks provided numerous examples of customers that have dropped ArcaBook in response to price increases and of customers who substitute one exchange's depth products for those of another exchange. Tr. 67:22-80:2; Tr. 90:13-22. He showed that broker-dealers only offer depth-of-book data to some of their customers, and that no broker-dealers offer all markets' depth-of-book data to any of their retail customers. Tr. 49:21-56:16. Mr. Brooks also showed that SIFMA members make billions of dollars in profit by reselling market data like ArcaBook. Tr. 60:3-62:24; NYSE Arca. Ex. 90.

NYSE Arca also submitted the expert report and testimony of Profs. Terrence Hendershott and Aviv Nevo.¹¹ The conclusion of the Hendershott-Nevo Report is that

¹¹ Hendershott-Nevo Report (NYSE Arca Ex. 65). Prof. Hendershott is a Professor at the Haas School of Business at the University of California, Berkley, has published numerous articles related to the impact of information technology on financial markets, serves on the editorial boards of several leading operations management and finance journals, and served as a visiting economist at the New York Stock Exchange and as a member and chair of the NASDAQ Economic Advisory Board. *Id.* ¶¶ 1-5. Prof. Nevo is a former Deputy Assistant Attorney General for Economic Analysis in the Antitrust Division of the DOJ—the highest-ranking economics position in the Antitrust Division. He is currently a Professor of Economics and of Marketing at Northwestern University. Prof. Nevo has written extensively on competition issues and been published in a number of leading economic journals. *Id.* ¶¶ 6-11.

“competitive forces discipline and constrain NYSE Arca’s pricing of ArcaBook, and in particular disciplined and constrained the fees that NYSE Arca set when ArcaBook first became a paid market data product in January 2009.” *Id.* ¶ 22. The Hendershott-Nevo Report establishes that competition for order flow and competition for depth-of-book data products both impose significant competitive constraints on NYSE Arca’s pricing of ArcaBook. *See id.* ¶¶ 22-23. Profs. Hendershott and Nevo also concluded that examining whether a proprietary market data product is priced above “marginal cost” is not appropriate because the relationship between price and marginal cost is not an appropriate measure of the competitiveness of an industry and, moreover, would involve arbitrary allocations of costs across the joint costs of the trading platform. *Id.* ¶ 24.

ARGUMENT

I. STANDARD OF REVIEW

NYSE Arca’s rules must, among other things, (i) provide for the equitable allocation of reasonable dues, fees, and other charges among its members and issuers and other persons using its facilities, (ii) promote just and equitable principles of trade and not permit unfair discrimination between customers, issuers, brokers, or dealers, and (iii) not impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Exchange Act. *See NetCoalition I*, 615 F.3d at 528. The distribution of products like ArcaBook must be done on fair and reasonable and not unreasonably discriminatory terms. *See id.* at 531.

In *NetCoalition I*, the D.C. Circuit approved the SEC’s “market-based approach” for evaluating the pricing of ArcaBook. Pursuant to this approach, the “SEC first asks whether the exchange was subject to significant competitive forces in setting the terms of its proposal for non-core data, including the level of any fees.” “Significant competitive forces” can be established by, *inter alia*, (i) an exchange’s “compelling need to attract order flow from market

participants” or (ii) “the availability to market participants of alternatives to purchasing” depth-of-book data.¹² If significant competitive forces exist, the SEC will approve the proposal unless there is “a substantial countervailing basis to find that the terms violate the [‘34] Act or SEC rules.” *Id.* at 532. Only if the exchange was not subject to significant competitive forces in setting prices for depth-of-book data will the SEC require demonstration of a “substantial basis, other than competitive forces, in [the exchange’s] proposed rule change demonstrating that the terms of the proposal are equitable, fair, reasonable, and not unreasonably discriminatory.”¹³

The D.C. Circuit held that the SEC was *not* required to assess proposed fees using a cost-based approach.¹⁴ To the contrary, the D.C. Circuit held that the SEC’s “market-based approach to evaluating whether ... non-core data fees are ‘fair and reasonable’ ... is a permissible one.” *NetCoalition I*, 615 F.3d at 535; *see also NetCoalition II*, 715 F.3d at 354. Although the D.C. Circuit noted that cost may be relevant under some circumstances (*id.* at 537), it did not mandate the submission of cost data where other evidence demonstrates that an SRO’s fee is

¹² *Id.* at 539; *see also* ArcaBook Approval Order (NYSE Arca Ex. 46) at 48-49. In *NetCoalition I*, the D.C. Circuit made clear that, although the record *then* before it did not support the conclusion that NYSE Arca was subject to significant competitive forces in pricing ArcaBook (*id.* at 544), a more developed record could establish the existence of significant competitive forces. *See, e.g., id.* at 540 (the SEC’s “conclusion [regarding order flow competition] is not objectionable in theory”).

¹³ *Id.* Even if Your Honor were to find that NYSE Arca was not subject to significant competitive forces in setting the prices in the ArcaBook Filing, the rule would still comply with the ‘34 Act because there is a “substantial basis, other than competitive forces [for concluding] that the terms of the proposal are equitable, fair, reasonable, and not unreasonably discriminatory.” ArcaBook Approval Order (NYSE Arca Ex. 46) at 49. The ArcaBook Filing benefits market participants by enhancing market transparency, fostering competition among orders and markets, and enabling buyers and sellers to obtain better prices. NYSE Arca Ex. 1 at NYSE_ARCA_000002.

¹⁴ *NetCoalition I*, 615 F.3d at 535, 537. The D.C. Circuit found that “the SEC responded to the congressional desire that it rely ‘on competition, whenever possible, in meeting its regulatory responsibilities for overseeing the SROs and the national market system.’” *Id.* at 535. The D.C. Circuit also noted that when Congress intended to require the SEC to use a cost-based standard it said so explicitly, but did not do so here. *Id.* at 534, n. 11.

“fair and reasonable” and “not unreasonably discriminatory.” Indeed, as the record already established, requiring cost-based pricing would stifle competition and innovation, entangling the industry in time-consuming, expensive, and ultimately fruitless proceedings. See ArcaBook Filing (NYSE Arca Ex. 1) at 23-26 & Ex. 3D; Tr. 301:17-305:24; Tr. 379:7-380:25; Tr. 1173:10-20; Tr. 1132:8-1134:15. As the SEC already found, it is “virtually impossible to identify the costs specifically associated with the production of market data versus other SRO functions,”¹⁵ and SIFMA has submitted no evidence to contradict that finding.

Finally, in *NetCoalition I* the D.C. Circuit did not evaluate the merits of either the 2006 NYSE Arca Rule Change filing or the fees charged pursuant to it. The express holding of *NetCoalition I* was based on the then-existing record and the D.C. Circuit remanded so that the Commission could better explain the basis for its approval. *NetCoalition I*, 615 F.3d at 544. The ArcaBook Filing at issue here mooted that remand and is now supported by a different and much larger record than what the D.C. Circuit reviewed in *NetCoalition I*, including concessions by SIFMA regarding several issues that had been disputed in *NetCoalition I*. For example, although SIFMA previously contested the joint platform theory and the D.C. Circuit did not consider its merits, SIFMA now concedes that executions and market data are joint products.¹⁶

II. NYSE ARCA’S PRICING OF ARCABOOK IS SUBJECT TO SIGNIFICANT COMPETITIVE CONSTRAINTS

SIFMA’s challenge rests on (i) a misreading of *NetCoalition I*, (ii) opinions that ignore existing evidence and do not rely on evidence from SIFMA members, and (iii) arguments

¹⁵ ArcaBook Approval Order (NYSE Arca Ex. 46) at n. 97. SIFMA’s criticism that NYSE Arca did not submit evidence concerning the marginal cost of producing and distributing depth-of-book data (Evans Report (SIFMA Ex. 377) ¶ 54) is thus misplaced. Cost evidence is not necessary because there is ample evidence of competitive constraints.

¹⁶ Compare *NetCoalition I*, 615 F.3d at 541 n. 16 with Evans Report (SIFMA Ex. 377) ¶ 21 (exchanges “produce multiple related products”) and ¶¶ 22-26 (exchanges act as “multi-product platforms”).

that ignore how markets operate in the real world. Contrary to SIFMA's assertions, the pricing of ArcaBook is subject to significant competitive constraints.

A. ArcaBook Is Sold In A Competitive Market

1. The DOJ Has Found That There Is Substantial Competition For The Sale Of Proprietary Market Data

Since *NetCoalition I* was decided, the DOJ has twice examined competition among exchanges and twice concluded that exchanges compete against each other for the sale of proprietary market data:

- In examining a proposed merger between exchange groups, the DOJ's Antitrust Division conducted an extensive investigation over the course of approximately ten months to analyze how the proposed merger would affect any and all aspects of competition between the exchanges. As a result of its investigation, the DOJ concluded that there was significant competition between exchanges to sell real-time proprietary equity data products in the United States. As a result, the DOJ imposed conditions on the proposed merger to preserve that competition.¹⁷
- The DOJ also blocked a hostile tender offer for NYSE Euronext by Nasdaq's parent, again after an extensive and thorough investigation of the likely effects the proposed acquisition would have on competition between exchanges. The DOJ blocked the acquisition after concluding, *inter alia*, that the acquisition would have substantially eliminated competition for the sale of proprietary market data products. NYSE Arca Ex. 10. Remarkably, SIFMA's expert reports did not even acknowledge the DOJ's conclusions, thus leaving undisputed the DOJ's explicit recognition of actual competition between exchange groups (including NYSE, Nasdaq, and BATS) to sell proprietary market data. Tr. 169:4-20; Tr. 291:5-13; Tr. 682:8-685:24.

On their own, these conclusions by the primary enforcer of federal antitrust law—about which SIFMA's expert reports say *not a word*—are sufficient to conclude that competition constrains

¹⁷ NYSE Arca Ex. 8 ¶¶ 1, 4, 20, 21, 24, 28, 31, 33; NYSE Arca Ex. 9 at 1-2, 6-8, 13. SIFMA asserts that the DOJ merely "suggested," but did not expressly "find," that the market is competitive and contestable. Tr. 329:5-20. But the DOJ's statements speak for themselves, and there is no dispute that the DOJ concluded that there is significant competition between exchanges to sell proprietary market data. *Id.*; NYSE Arca Exs. 8-9. SIFMA's attempt to stress "formidable" barriers to entry also fails: The DOJ reached its conclusion notwithstanding such barriers and Prof. Nevo testified that such barriers have lessened since the DOJ Complaint was filed in 2011. Tr. 327:8-328:3.

the pricing of proprietary market data products.

2. Competition Between Exchange Platforms Constrains Pricing

It is undisputed that market data and trade executions are joint products with joint costs. Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶¶ 38-42; Evans Report (SIFMA Ex. 377) ¶ 21. The Exchanges compete as trading platforms by providing numerous services, including trade executions, market data, listing services, and co-location services, among others.

Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶ 38. And they try to maximize overall profits from *all* their services. *Id.* ¶¶ 40-42. As a result, exchanges need to make sure that their prices for all their services are competitive: if the cost of doing business on the exchange increases relative to competitors, customers will go elsewhere—just as in any competitive business. *Id.*

And it is undisputed the exchange business is very competitive:

- Competitors have made significant inroads into the incumbent exchanges' market share, new trading platforms have entered the market, traders have taken their order flow to new platforms, and the incumbent exchanges have lost substantial market share. *See* Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶¶ 50, 61 & Ex. 2; Tr. 1075:20-1076:9 (Dr. Evans acknowledging that SIFMA members operate dark pools and ATSS that compete fiercely with the Exchanges).
- As a result of regulatory and technological changes, today approximately a dozen exchanges compete with a variety of ATSS, such as dark pools, for trades in the same securities; 40% of all trading in equities occurs on those ATSS. *Id.* ¶ 50-51 & Ex. 2.

As even Dr. Evans agreed, the introduction of Reg NMS “had a major effect on the competitive landscape and caused price wars among the U.S. exchanges.” Tr. 1087:19-23. This vigorous platform competition disciplines exchanges' depth-of-book data pricing by forcing exchanges to keep overall costs of trading (including the cost of proprietary market data) low; otherwise, that business will go elsewhere.

Critically, SIFMA has abandoned the opposition to the joint platform theory it pursued in *NetCoalition I*; SIFMA now concedes that depth-of-book data and trade execution

services are joint products.¹⁸ Dr. Evans, for example, agrees that (i) exchanges compete as multi-product platforms and (ii) proprietary data products and trade executions are interdependent such that the decision to buy one product impacts the decision to buy the other product. Tr. 166:13-167:3; Tr. 274:18-276:16. Despite those concessions, SIFMA argues that rather than constraining market data prices, platform competition *increases* market data prices because, according to Dr. Evans, customers who purchase depth-of-book data cross-subsidize trade executions. Evans Report (SIFMA Ex. 377) ¶¶ 11-12; Tr. 277:8-278:11.

For that proposition, Dr. Evans relies upon a theoretical economic model of “multi-sided competition,” but he does not provide any evidence that his theoretical model fits this case. Tr. 167:4-23; Tr. 278:13-279:20. Dr. Evans’ multi-sided platform theory depends on there being different actors on different sides, with one group “cross-subsidizing” the other through higher fees. Evans Report (SIFMA Ex. 377) ¶¶ 22-23 (e.g., newspaper *readers* pay a price for the newspaper that does not cover the cost of printing and distribution, and are “subsidized” by fees paid by newspaper *advertisers*); Tr. 1267:23-1269:17. Here, however, the customers that are purchasing depth-of-book data are also the ones doing most of the trading. Tr. 279:1-20. There cannot be “cross-subsidization” because market participants would be “cross”-subsidizing *themselves* (*id.*), an oxymoron. In any event, the customers that purchase depth-of-book data account for a large percentage of trading volume; to the extent they feel they are being charged supracompetitive prices for market data, they have the ability to combat that by moving order flow to competing exchanges. Tr. 308:7-309:3. As discussed in more detail below,

¹⁸ Compare Reply Brief of Petitioners NetCoalition and SIFMA, *NetCoalition I*, (D.C. Cir. Dec. 16, 2009) at 3 (depth-of-book data and order executions “are sold separately and often purchased by different customers”) with Evans Report (SIFMA Ex. 377) ¶ 21 (exchanges “produce multiple related products”); ¶¶ 22-26 (exchanges act as “multi-product platforms”).

_____ and others

have done, or threatened to do, exactly that. Tr. 309:4-18; *see infra* § II.B.

3. Competition At The Level Of Individual Stocks Constrains Pricing

The Hendershott-Nevo Report not only quantifies competition between exchanges by aggregate trading volume, it also performs an analysis at the level of individual stocks.

Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶¶ 55-64. This analysis shows that if a stock is traded on one exchange, there is a high probability that it is traded on another exchange. NYSE Arca Ex. 83; Tr. 291:14-294:6. For example, 89.1 percent of securities that traded on NYSE Arca in a month also traded on Nasdaq, and 91.8 of securities that traded on Nasdaq also traded on NYSE Arca. *Id.* When weighted by trade volume, these figures approach 100 percent. *Id.*

This evidence shows that, using the DOJ's standard tool for measuring market concentration, the concentration of aggregate trading volume by exchange owner is low, and trading for nearly all stocks is unconcentrated or moderately concentrated and distributed across a variety of trading platforms.¹⁹ In other words, competitive constraints among trading platforms impact trading in essentially all stocks. *Id.* ¶¶ 56-62. This conclusively refutes SIFMA's

¹⁹ NYSE Arca Ex. 78; Tr. 295:4-298:6. Although Dr. Evans concedes that the HHI analysis used in the Hendershott-Nevo Report is the "standard measure of concentration," he asserts that the analysis should exclude "non-exchange trading venues, for which depth-of-book data are generally not available." Evans Report (SIFMA Ex. 377) ¶ 72 & n. 83. But Dr. Evans provides no explanation why non-exchange *trading* venues should be excluded from calculations of concentration in *trading*. All the venues Dr. Evans would exclude compete with NYSE Arca for *trades*. Indeed, because SIFMA members own many of these alternative trading venues, Dr. Evans conveniently proposes to exclude venues owned by his client's own members and to which they send vast amounts of order flow. *See, e.g.*, SIFMA Ex. 369; Tr. 183:12-187:21. Dr. Evans thus suggests a higher concentration of trading volume by excluding the competitors his client represents and that its members patronize. Dr. Evans also ignores that some large traders commit their order flow without regard to the availability of depth data at all (*Lim v. Charles Schwab & Co., Inc.*, Case No. 3:15-cv-02074-EDL (N.D. Cal., filed May 8, 2015), Complaint ¶¶ 1, 8-34), making it even more anomalous to exclude such venues.

arguments that trading in a large portion of individual stocks is concentrated at a single exchange, thereby requiring traders to buy all exchanges' depth-of-book data.²⁰

Despite his lack of expertise,²¹ Prof. Donefer criticizes the HHI analysis on the ground that it measures concentration on a monthly basis instead of taking into account “real-time liquidity volatility.” Donefer Report (SIFMA Ex. 376) ¶¶ 48-49; Tr. 897:23-898:18. But Prof. Donefer admitted he “did not do any statistical or analytical analysis” related to real-time liquidity volatility (or any other issue) for his report. *Id.* Prof. Donefer also ignores the fact that depth-of-book data is sold through monthly subscriptions (Donefer Report (SIFMA Ex. 376) ¶ 49), which is how Profs. Hendershott and Nevo analyzed the data. Put differently, an HHI analysis measures concentration in an industry. Prof. Donefer's proposed (but not implemented) measurement method suggests that he would measure concentration by examining ArcaBook data at every specific point in time during trading; because ArcaBook data is not sold that way, that cannot be the correct method any more than one could measure competition in the automotive industry by looking at one randomly selected car sale.

4. Exchanges Face Competition Notwithstanding SIFMA's Claim That Their Market Data Is “Unique”

SIFMA has not addressed the evidence establishing that the marketplace for proprietary market data is competitive. Instead, SIFMA defines the question it would prefer to answer in a way that intentionally excludes any possibility of competitive constraints: In

²⁰ Prof. Donefer falls back on his contention that depth-of-book data is critical to the small number of stocks for which trading is concentrated on particular exchanges. Donefer Report (SIFMA Ex. 376) ¶ 48. But the few such stocks are generally small-cap and thinly-traded stocks, and together they make up less than 3% of average daily trading volume and market capitalization, as Prof. Donefer conceded at trial. Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶ 61(c); Tr. 897:14-22.

²¹ Prof. Donefer is not “familiar with how an HHI actually computes these numbers” and had “never seen [an HHI analysis] before [he] saw it in [the Hendershott-Nevo] report.” Tr. 895:5-896:2.

SIFMA's view, because each exchange "has exclusive control over the only source of information on the liquidity available on its exchange below the top of book," the only relevant product for each exchange is that exchange's depth product. Evans Report (SIFMA Ex. 377) ¶ 6.

This argument fails for several reasons:

- It has no legal basis. A firm is always the exclusive provider of its own products: The fact that Ford Motors is the only source of new Ford cars does not mean that Ford cars do not face competition from other car brands. Courts routinely reject market definitions consisting of just one supplier's products. *See, e.g., Town Sound & Custom Tops, Inc. v. Chrysler Motors Corp.*, 959 F.2d 468, 480 (3d Cir. 1992).
- It is inconsistent with the fact that NYSE and Nasdaq expend so much effort marketing their proprietary market data products. Tr. 66:23-67:21; Tr. 387:6-21. If their proprietary market data products faced no competition and their uniqueness made them essential, there would be no need for NYSE and Nasdaq to have such robust sales forces to pitch their market data products. *Id.* Put differently, if the products were essential, there would be no examples of market participants choosing not to buy them. But the record contains many such examples.
- The argument rests on the false assumption that a firm not operating in a perfectly competitive market must have monopoly power of antitrust concern. Under that false assumption, deviations from the conditions of perfect competition (in which no firm sells products that are in any way differentiated from its competitors' products) imply that a firm is a monopolist. But the theoretical "perfectly competitive" market does not exist—it is a textbook construct used to teach basic concepts in introductory economics courses, as Dr. Evans admitted at trial. Tr. 1092:14-17. In the real world, most firms sell products that are differentiated from their competitors in some ways, and as a result have some "market power" over their own products. But this does not mean that they do not face significant competitive constraints. *See Hendershott-Nevo Report* (NYSE Arca Ex. 65) ¶ 94 and n. 116-21.
- It is inconsistent with the behavior of SIFMA's members: If SIFMA's theory was correct, then every SIFMA member would buy all depth-of-book products, but the undisputed evidence showed they do not. Tr. 71:13-75:10; Tr. 79:8-80:2. Likewise, SIFMA's broker-dealer members would give all markets' depth-of-book data to all of their retail customers. But the undisputed evidence showed that broker-dealers offer *some* depth-of-book data to *some* customers, and none offer all markets' depth-of-book data to any retail customers. NYSE Arca Exs. 82, 87, 88; Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶¶ 81-87; Tr. 49:21-56:16; Tr. 182:6-183:11; Tr. 318:9-319:10.

Finally, Dr. Evans' analysis excludes BATS (Evans Report (SIFMA Ex. 377) ¶ 72 & n. 83), which makes no sense because BATS distributes depth-of-book data. He also excludes

non-exchange venues like dark pools that are run by the Exchanges' competitors—many of whom are SIFMA members—and that account for approximately 40% of trading volume even though they do not offer depth-of-book data. *Id.*; Hendershott-Nevo Report, (NYSE Arca Ex. 65) at Ex. 2. The fact that approximately 40% of trading occurs on such venues, which do not offer depth-of-book data at all, disproves SIFMA's claims that everyone needs all depth-of-book data all the time; the undisputed fact that unlit venues draw significant amounts of order flow cannot be reconciled with SIFMA's theory.²²

B. Competition For Order Flow Disciplines Depth-Of-Book Data Pricing

In *NetCoalition I*, SIFMA conceded that NYSE Arca operates in a competitive market for order flow and did not dispute the SEC's findings that (i) "competition for order flow is fierce" among trading venues and (ii) "no exchange can afford to take its [order flow] market share percentages for granted." *NetCoalition I*, 615 F.3d at 539. Nor is there any dispute about the linkage between depth-of-book data and order flow; indeed, SIFMA reaffirms that linkage here. Evans Report (SIFMA Ex. 377) ¶ 56 ("Depth-of-book data and order flow are interdependent."). The only question posed by the D.C. Circuit was whether the linkage "works both ways: not only that increased order flow makes market data more valuable but that more modestly priced market data drives increased order flow." *NetCoalition I*, 615 F.3d at 539. Although the D.C. Circuit found insufficient evidence in the prior record to determine that order flow competition constrains market data prices, the current record compels the conclusion that it does.

²² ArcaBook itself does not even present a full picture of NYSE Arca's liquidity beyond the top of the market, because not all limit orders submitted to NYSE Arca are displayed in ArcaBook: Market participants can submit non-displayable ("hidden") orders, reserve ("iceberg") orders, and midpoint orders, none of which are displayed in ArcaBook. Tr. 22:11-24; Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶ 27.

1. **Trader Behavior Confirms The Linkage Between Order Flow And Proprietary Market Data Pricing**

A key question the D.C. Circuit had was whether large customers could and would divert order flow from an exchange if they were unhappy with that exchange's depth-of-book data prices.²³ [REDACTED] answered that question for SIFMA not even two years later: In a [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

NQ Ex. 505 (emphasis added). That threat was not idle: [REDACTED]

[REDACTED]

[REDACTED] NQ Exs. 506-507, 619; Tr. 510:7-514:20; Tr. 1198:22-1199:10. Large traders can and do behave precisely as the D.C. Circuit suspected.

Mysteriously, Dr. Evans asserted that there was no evidence that there was any significant and long lasting diversion of order flow from [REDACTED] Evans Report (SIFMA Ex. 377) ¶ 69; Tr. 1192:2-6. SIFMA had Dr. Evans meet with [REDACTED] specifically to discuss this email. Dr. Evans initially testified that [REDACTED] told him that

he was only able to pull [order flow] for a short period of time. The time I recall is something like two months, and he didn't feel like he could carry through his threat for much longer than two months because it was just costing him too much.

And as a result of that, after pulling order flow -- he did it for a couple of months, but then put the order flow back. So he did not believe that he could really carry through the

²³ See *id.* at 540-41 & n. 14 (recognizing that if the target audience for depth-of-book data is responsible for enough trading compared to the non-target audience, then the availability of depth-of-book data could affect trading revenue in a way that constrains pricing).

threat that he made.

Tr. 1192:7-1193:8. After being confronted with evidence showing that [REDACTED], Dr. Evans testified that “obviously, these data are inconsistent with what I am very sure [REDACTED] told me.” Compare NQ Ex. 619 with Tr. 1195:21-1203:6. Dr. Evans offered nothing other than [REDACTED] supposedly non-relied on) word to ignore exactly the sort of direct evidence Dr. Evans opined did not exist.²⁴ Dr. Evans thus had no basis for his opinion.

NYSE Arca provided additional un rebutted examples of customers that expressed disapproval of market data prices and attempted to use their leverage to drive prices down. For example, in January 2015, following NYSE Arca’s announcement of price changes impacting the redistribution of depth-of-book data, [REDACTED] informed NYSE Arca that if its depth data became too expensive its customers were going to stop purchasing it and send their order flow to another exchange. Tr. 73:13-74:4. Around the same time, [REDACTED] one of [REDACTED] competitors, issued the same warning to NYSE Arca.²⁵ In fact, NYSE Arca’s pricing strategy is specifically designed around the linkage between order flow and market data—NYSE Arca tries to avoid alienating customers because it wants customers to purchase ArcaBook and not send

²⁴ NQ Ex. 616; Tr. 1203:7-1204:17. It is thus suspicious that Dr. Evans (i) claimed he had decided in advance of his meetings with [REDACTED] that he was not going to “rely” on any information he obtained during these meetings when drafting his report (Tr. 1225:18-25) and (ii) failed to ask [REDACTED] for data regarding what [REDACTED] actually did at their meeting (Tr. 1204:18-1208:8). Because SIFMA submitted no evidence contrary to the record and Dr. Evans disclaimed reliance on what he claimed [REDACTED] told him, SIFMA cannot dispute that large traders can and do [REDACTED]

²⁵ Tr. 74:5-75:10. Nasdaq provided additional un rebutted examples of SIFMA members pulling, or threatening to pull, order flow in order to constrain depth-of-book prices and put downward pressure on the total costs of trading. Ordover Report (NQ Ex. 601) ¶¶ 36-38. For example, [REDACTED] used strategies similar to [REDACTED] to seek reduced depth-of-book data fees. *Id.* ¶¶ 37-38; NQ Exs. 501, 503.

order flow to other venues. Tr. 143:15-22.

Despite the D.C. Circuit's clearly-expressed interest in what "trader behavior" showed, SIFMA elected to (i) submit no affirmative evidence of trader behavior, (ii) provide no evidence to challenge the evidence submitted by NYSE Arca and Nasdaq, and (iii) conceal meetings SIFMA's experts had about this very subject with SIFMA members with clearly relevant evidence. *See* NYSE Arca Sanctions Reply at 5-8. Accordingly, the only permissible inference is that traders can and do [REDACTED] and can and do divert order flow from an exchange if they are unhappy with that exchange's depth-of-book data prices. Indeed, SIFMA's own experts admitted that threats like the one [REDACTED] made and followed through on have real teeth. Tr. 1041:4-1043:7; Tr. 1202:14-1203:6.

2. Competition To Attract Displayable Liquidity Constrains Market Data Pricing

Even if there was a need to look beyond the record of SIFMA member conduct, the ArcaBook Filing demonstrates that competition for order flow constrains ArcaBook pricing because the more that potential customers are exposed to an exchange's data, the more likely they are to send orders to that exchange. Conversely, if data pricing dissuades traders from looking at the exchange's data, they are less likely to send orders to that exchange. *See* ArcaBook Filing (NYSE Arca Ex. 1) at 15-21. Even Dr. Evans agrees. Evans Report (SIFMA Ex. 377) ¶¶ 25, 77. And he reconfirmed his agreement at trial by testifying that "[o]rder flow ... is portable. I'm not disagreeing that its portable. It's obviously portable" (Tr. 1170:4-8) and that "certainly, for depth-of-book data, I'm not disagreeing at all that it is possible for traders to move order flow between different exchanges and to pick different amounts of liquidity from different exchanges depending upon the prices." Tr. 1170:14-18.

It is thus not surprising that NYSE Arca spends hundreds of millions of dollars

per year to attract order flow. By means of an SEC-approved practice, NYSE Arca pays investors for submitting displayable limit orders under the maker-taker model. Tr. 31:20-33:16; Tr. 720:3-721:10. Thus, a market participant that executes an order that takes liquidity pays NYSE Arca a fee, and one that executes an order that provides liquidity receives a rebate. *Id.* The rebate is highest for displayable orders, with a reduced (or no) rebate for non-displayable orders, depending on the type of order. *Id.* NYSE Arca pays more for displayable limit orders than non-displayable limit orders because it competes with other exchanges for order flow, and displayable orders attract liquidity takers and result in trade executions. Tr. 33:10-34:9. Nasdaq also rebates approximately \$700 million per year to makers of liquidity to attract orders to Nasdaq as opposed to other exchanges. Tr. 431:5-432:20. The recipients of these rebates (largely SIFMA members) have the ability to direct their order flow to the venues of their choosing for any reason; if they could not do so, there would be no reason for exchanges to pay hundreds of millions of dollars per year to attract that order flow. Tr. 1029:9-25.

The scope of the rebates exchanges pay to attract liquidity dwarfs the revenues from the sale of proprietary market data products. Although NYSE Arca does not track costs attributable to or calculate profit margins on market data products (Tr. 47:12-14), Nasdaq does. The rebates paid by Nasdaq are approximately [REDACTED] greater than the total revenues that Nasdaq reports for the sale of its proprietary data products (Tr. 1340:10-1341:5), and its margin would be wiped out entirely if only [REDACTED] it paid in rebates were attributed to market data for accounting purposes (Tr. 736:8-738:21; Tr. 1031:14-1032:5). The rebates "are a joint cost of creating liquidity and the data" that flows into depth-of-book products, and without them there would be a reduction in the depth-of-book data available to sell. Tr. 1149:10-25.

3. **NYSE Arca's January 2009 Price Increase Demonstrates That Competition For Order Flow Constrains Pricing**

When NYSE Arca began charging for ArcaBook in January 2009,²⁶ it lost a significant number of accounts, going from approximately 220 accounts with ArcaBook direct data feed access to 170.²⁷ Currently, [REDACTED] subscribers take the ArcaBook feed. Tr. 48:11-49:6. These are sophisticated organizations with highly specialized uses for the data, such as high frequency traders and those that redistribute the data for profit. *Id.*

And as shown by Profs. Hendershott and Nevo, the imposition of a fee for ArcaBook in January 2009 directly reduced order flow to NYSE Arca. Using a regression analysis, Profs. Hendershott and Nevo determined that when NYSE Arca began charging for ArcaBook in January 2009, NYSE Arca's share of trading volume relative to the rest of the market [REDACTED] and its share [REDACTED] relative to the rest of the traditional exchanges' trading volume. Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶¶ 67-69 & Ex. 6; NYSE Arca Ex. 81; Tr. 280:2-17. This demonstrates that the increased cost of trading at NYSE Arca resulted in a decline of order flow for NYSE Arca. This is consistent with the SEC's finding that the inseparable connection between order flow and market data "pressures

²⁶ This was not, as Dr. Evans describes it (Tr. 1109:12-20), a "massive" price increase. In absolute terms, ArcaBook prices increased only \$10/month for nonprofessional display users and \$30/month for professional display users. Tr. 1394:1-1395:10; Tr. 1242:5-1244:17. In describing this increase as "massive," Dr. Evans also did not take into account the far more significant infrastructure costs depth data feed recipients incur in order to take the feeds and make them usable. Tr. 1244:18-1246:13.

²⁷ NYSE Arca Ex. 1 at NYSE_ARCA_000145; Tr. 66:17-22; Tr. 90:13-22. Dr. Evans incorrectly criticized what he called a disparity between the testimony of NYSE Arca's fact and expert witnesses concerning the magnitude of customer loss following the January 2009 ArcaBook price increase. There was no disparity. The Hendershott-Nevo Report combined the number of entities that *receive* ArcaBook data, either directly or indirectly through a third-party. Tr. 1398:9-1399:10. In contrast, Mr. Brooks' testimony and the ArcaBook Filing only discussed the number of entities taking the ArcaBook feed itself. *Id.* The two measure different things. In any event, as Prof. Nevo explained, both metrics moved in tandem in exactly the same direction—they declined. *Id.*

exchanges not to take any action with respect to market data that might jeopardize [their] position in the competition for order flow” because to “do otherwise would jeopardize the exchange’s own lifeline.”²⁸ This reduction in customers and order flow is particularly striking given that, since March 2006, the marketplace was aware that NYSE Arca planned to begin charging for ArcaBook, and customers had to make investments to utilize ArcaBook data (with full knowledge of these prospective price increases) even when the data itself was free. Tr. 1235:12-1242:4.

Dr. Evans criticizes Profs. Hendershott and Nevo’s regression analysis, arguing that its results are consistent with a firm with market power that chooses to sacrifice some revenue from order flow in favor of higher market data prices. Tr. 281:12-283:4. As an initial matter, even that criticism acknowledges the fundamental linkage between depth-of-book prices and order flow—that an increase in market data prices will result in a reduction of order flow. *Id.* As for his argument that the linkage is consistent with an exchange exercising market power, it relies on a simplistic and unrealistic version of the theory of perfect competition—a theory Dr. Evans concedes is not relevant here. Tr. 1092:14-17. In the real world, the fact that a company raises price and loses some, but not all, customers (as happens daily) does not signify that that company has any meaningful market power. *Id.* And he completely ignores the fact that, because there are significant infrastructure costs involved in taking the ArcaBook feed, it was not “free” even before NYSE Arca was allowed to charge for the data.

Dr. Evans’ additional argument that “order flow competition is positively

²⁸ ArcaBook Approval Order (NYSE Arca Ex. 46) at 89. That analysis is supported by the real-world example of the Island ECN, whose market share dropped precipitously immediately after it stopped displaying certain market data. NYSE Arca Ex. 84; Tr. 198:20-201:6. Island’s market share rebounded shortly after it began displaying that data again. *Id.* The Island example further supports the conclusion that the availability of market data can and does cause traders to move their order flow to other venues.

correlated with an increase in market data prices because market data prices have gone up during the time that the exchanges have been facing increased competition from order flow” is also wrong. Most critically, Dr. Evans did not perform any analysis to support his view. His opinion, therefore, is entirely speculative. Tr. 283:5-284:20. But even if he had tested for correlation (he did not), he would not have shown that an increase in order flow competition *causes* an increase in market data prices—as is well known, correlation is not causation. *Id.* Indeed, the direction of Dr. Evans’ asserted effect is contrary to his multi-sided market theory (which requires that as an exchange loses market share of order flow, depth-of-book data becomes less valuable).²⁹

4. ArcaBook Is Priced In The Inelastic Portion Of The Demand Curve

Finally, ArcaBook pricing is not consistent with the conduct of a firm seeking to maximize revenues from ArcaBook (as a firm might do if it sold *only* depth-of-book data), but rather is consistent with the conduct of a firm seeking to maximize revenues from a portfolio of products.³⁰ The evidence shows that ArcaBook is priced in the inelastic region of the demand curve, even though a company with market power would never do this.³¹ This shows that NYSE

²⁹ Tr. 284:5-20. Dr. Evans’ criticism that the regressions did not control for other factors that might affect NYSE Arca’s trading volume is unfounded. The regression analysis controlled for the total amount of overall market trading volume and for BATS’ registration as an exchange. Tr. 202:2-206:3; 284:25-287:11. Dr. Evans’ criticism in connection with Nasdaq’s market share is also misplaced because the regression was not designed to analyze anything about Nasdaq—it was designed to examine whether or not NYSE Arca lost market share after it started charging for ArcaBook. Tr. 206:4-208:4; Tr. 287:12-289:16. The evidence shows that it did.

³⁰ Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶¶ 71-75. SIFMA concedes that market data and trade execution are joint products. *See, e.g.*, Evans Report (SIFMA Ex. 377) ¶¶ 22-26 (exchanges act as “multi-product platforms”).

³¹ NYSE Arca Ex. 86; Tr. 309:19-315:12. In economics, if demand is elastic, then revenues decline in response to a price increase, as the decline in unit sales is greater than the increase in price. If demand is inelastic, revenues increase in response to a price increase, as the decline in unit sales is smaller than the increase in price. Hendershott-Nevo Report (NYSE Arca Ex. 65) at n. 88.

Arca (i) does not have market power and (ii) is pricing to try to maximize profits from the overall sale of complementary products (NYSE Arca Ex. 86; Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶¶ 73-75; Tr. 309:19-315:12) and is consistent with the fact that market data accounts for less than 9% of NYSE's total revenue, whereas trading fees account for approximately two-thirds of its revenues (Hendershott-Nevo Report (NYSE Arca Ex. 65) Ex. 1).

C. Trader Behavior And The Availability Of Substitutes Show That ArcaBook Pricing Is Constrained

NetCoalition I invited consideration of who uses depth-of-book data, the amount of trading they account for, and how they respond to changes in pricing for that data. *NetCoalition I*, 615 F.3d at 541 n. 14, 542-44. NYSE Arca submitted precisely that evidence in its rule filing, which shows that (i) some large traders on NYSE Arca did not believe that ArcaBook data was critical, (ii) large traders who did buy ArcaBook accounted for significant trading volume and have the ability to try to use that leverage to constrain proprietary market data pricing, and (iii) users were sensitive to the pricing of ArcaBook. ArcaBook Filing (NYSE Arca Ex. 1) at 12-15. The Exchanges have since put forth even more evidence of trader behavior establishing that depth-of-book products are interchangeable, including the fact that the DOJ concluded that competing proprietary market data products are substitutes. *Supra* § II.A.1; Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶ 80. It is no surprise that SIFMA introduced no evidence to rebut this showing: *First*, SIFMA members believe and act as if depth products can be substituted for one another by purchasing some but not all products. *Second*, Prof. Donefer conceded that most customers do not buy and do not need all depth-of-book data products. Tr. 915:8-919:14; Tr. 925:5-927:3.

SIFMA ignores this evidence and instead argues that the standard relied on by the D.C. Circuit and Commission requires products to be *perfect substitutes* to create competitive

Furthermore, a comparison of OpenBook and ArcaBook customer lists shows a number of subscribers that (i) used either ArcaBook or OpenBook but not both over an extended period or (ii) used both products but terminated their ArcaBook subscription at the time of an ArcaBook price increase. *Id.* ¶ 86.

- Broker-dealers do not buy depth products from all exchanges to distribute to their retail customers. ██████████ all purchase Nasdaq's TotalView or OpenView products, and collectively they distribute these Nasdaq products to more than ██████████ of their nonprofessional retail customers. NYSE Arca Ex. 87; Tr. 49:21-53:6; Tr. 182:6-183:11; Tr. 318:9-319:10. But ██████████ does not purchase *any* NYSE depth products for use by its retail investors, ██████████ only purchase ArcaBook, and ██████████ purchases only a limited subscription to OpenBook.³³
- Broker-dealers' internal use of professional display devices show the same thing. ██████████ does not pay an access fee to take any NYSE depth-of-book feed directly, ██████████ pays an access fee only for OpenBook, and ██████████ pay an access fee only for ArcaBook. NYSE Arca Ex. 88; Tr. 53:7-56:16. That none of these major broker-dealers purchase all depth-of-book products offered by NYSE, NYSE Arca, NYSE MKT, and Nasdaq disproves Prof. Donefer's assertion that customers need to purchase all the major exchanges' depth-of-book products. NYSE Arca Ex. 87; Tr. 49:21-53:6; Tr. 182:6-183:11; Tr. 318:9-319:10.
- ██████████ a proprietary trading firm that specializes in trading ETFs (of which NYSE Arca has a 23 percent market share) historically purchased NYSE Arca's depth-of-book data. But when NYSE Arca increased ArcaBook non-display fees in September 2014, ██████████ cancelled its subscription to ArcaBook, telling NYSE Arca that the price point was too high. Tr. 71:13-73:12. ██████████ continues to purchase Nasdaq depth-of-book data. *Id.*
- In February 2008, ██████████ informed NYSE Arca that it was interested in ArcaBook, but only because it was still being offered for free. NYSE Arca Ex. 57 at NYSE_ARCA_001421; Tr. 70:3-71:2. ██████████ now does not purchase ArcaBook for distribution to its retail customers. Tr. 70:3-71:2. It does, however, purchase Nasdaq depth-of-book data to distribute to its customers. *Id.* For the last several years, NYSE Arca has been trying to get ██████████ to switch from using Nasdaq's product to ArcaBook, but ██████████

³³

Id. Scottrade offers TotalView and OpenBook free to retail investors who meet minimum trading requirements, but does not offer ArcaBook to retail investors. NYSE Arca Ex. 92 at NYSE_ARCA_002005; NYSE ARCA Ex. 93 at NYSE_ARCA_002008; NYSE Arca Ex. 87; Tr. 56:25-59:3. And out of Scottrade's approximately ██████████ active accounts, only ██████████ customers per month actually view OpenBook data. Tr. 56:17-20; Tr. 58:15-22. Similarly, ██████████ pays for 142 of its millions of customers to access OpenBook, but it pays the enterprise cap for ArcaBook, thus enabling as many of its retail customers to access ArcaBook as it wants. NYSE Arca Ex. 87; Tr. 59:4-60:1.

has declined and stated that it only needs Nasdaq depth-of-book data. Tr. 79:8-80:2.

In the face of this evidence, Dr. Evans conceded that the major exchanges' depth-of-book products are substitutes, but asserted that they are not "significant" substitutes. Tr. 1135:23-1138:12. Prof. Donefer continues to assert (without any evidence) that each exchange's order book is entirely unique and not representative of the order book from another exchange, and therefore that depth-of-book products are not substitutes for each other. *See, e.g.*, Donefer Report (SIFMA Ex. 376) ¶ 77; Tr. 49:21-53:6; Tr. 182:6-183:11; Tr. 318:9-319:10.

But empirical evidence directly contradicts their assertions. Depth-of-book products offered by different exchanges are effective substitutes because the exchanges have a large overlap in the stocks they trade—if a security is traded on one exchange, the probability that it is also traded on other exchanges is greater than 99%. Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶¶ 88-91. Thus, there is only negligible trading volume that is not covered by multiple exchanges. As a result, individual exchanges cannot maintain an exclusive hold on depth-of-book data for a particular stock, and consequently the depth-of-book data products supplied by different exchanges act as substitutes for market participants seeking depth-of-book information about varied stocks at varied times. *Id.* ¶ 91.

The assertions are also contradicted by academic research. Tr. 174:17-177:17. A peer-reviewed paper recently accepted at the Review of Financial Studies concluded that there is a correlation in the contents of different markets' limit order books, meaning that that when changes occur in one limit order book they are very likely to occur in the other exchanges' limit order books.³⁴ Prof. Donefer did not comment on this paper in his report. Indeed, he admitted he had not even bothered to review it before submitting his report, despite the fact that it was

³⁴ *See* Van Kervel, Vincent, "Competition for Order Flow with Fast and Slow Traders," October 2014; Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶ 92 & n. 112.

cited and relied upon by Profs. Hendershott and Nevo.³⁵

2. Market Participants Substitute Depth-Of-Book Products

The Exchanges presented numerous uncontradicted examples of substitution:

- In 2014, [REDACTED] complained about depth-of-book fees, stated that its algo customers did not need depth data, and told Nasdaq that [REDACTED] NQ Ex. 508; Ordover Report (NQ Ex. 601) ¶ 24; Tr. 514:21-517:24.
- Oliver Albers, Nasdaq's Global Head of Sales in the Data Products Division, testified that customers dropped TotalView to switch to ArcaBook. Tr. 565:20-22.
- Prof. Ordover identified more than [REDACTED] examples of customers that switched³⁶ between TotalView and ArcaBook.³⁷
- Nasdaq presented evidence of [REDACTED] customers turning over, including customers substituting one depth-of-book product from one exchange with another depth-of-book product from a different exchange. NQ Ex. 511; Tr. 443:11-444:22.
- [REDACTED] dropped ArcaBook and continued taking TotalView. Tr. 70:3-73:12.
- Prof. Donefer testified that he used ArcaBook in occasional personal trading decisions while it was free, but that he dropped ArcaBook and switched to a BATS depth product once ArcaBook became fee-labile. Tr. 939:11-941:11.
- Customers can and do significantly reduce purchases of a particular depth-of-book product without switching entirely to a separate supplier. Tr. 806:3-18; Tr. 995:13-16; Tr. 1187:24-1188:8; *see also* Ordover Report (NQ Ex. 601) ¶ 27 [REDACTED] [REDACTED] have reduced subscriber counts for Nasdaq depth products

³⁵ Tr. 906:2-12. Dr. Evans' assertion that the study was about price correlation is wrong—it concerned the correlation between supply and demand across trading venues, not price correlation. Tr. 174:17-177:17. The study shows that if a market participant can see what is happening in one exchange's order book, it can learn about a correlated exchange's order book. Tr. 177:6-17. This is consistent with actual trader behavior, in that many traders do not purchase depth-of-book products from all exchanges. *Id.*

³⁶ SIFMA relies on a too-narrow definition to argue there was no "switching." Switching occurs not only when a customer stops using ArcaBook and uses TotalView (or vice versa), but also when a customer who had subscribed to both products drops one of them, or when a customer decreases usage of one in favor of another.

³⁷ Tr. 777:3-12. Despite criticizing Prof. Ordover's analysis, SIFMA did not provide any evidence that any customers identified by Prof. Ordover in fact remained Nasdaq customers through a vendor. Tr. 808:6-13. Of course, if there were any such evidence, SIFMA easily could have gotten it from its members.

significant market power exists is to “go straight to the source and look at the things that can give firms strength or make them weak when it comes to dealing with their customers.” Tr. 1097:20-1098:6. In his view, the “gold standard of evidence” for determining market power is “what customers do, in fact, in the marketplace.” Tr. 1110:8-11; Tr. 1193:9-12. And yet SIFMA did not present any such evidence, and Dr. Evans himself did not examine (or even ask for) any such evidence, even though he could have gotten any evidence he wanted from SIFMA. Tr. 1106:17-1107:8; Tr. 1110:15-1114:6. Several examples are particularly telling:

- Less than two weeks after SIFMA learned that [REDACTED] email threatening [REDACTED] [REDACTED] would be used in this proceeding and “specifically for this case,” SIFMA’s counsel arranged and attended a meeting between Dr. Evans and the author of that email (and five others) to discuss, among other things, that email. Tr. 1100:7-14; Tr. 1101:21-1102:12; Tr. 1103:15-19; 1152:11-23. But Dr. Evans (i) had decided in advance of that meeting (apparently without knowing what information would be conveyed to him) that he was not going to “rely” on any information conveyed to him during that meeting (Tr. 1225:18-25) and (ii) failed to ask [REDACTED] for data regarding what [REDACTED] actually did (Tr. 1193:9-1195:20; Tr. 1204:18-1208:8). As demonstrated above, [REDACTED] NQ Ex. 619; Tr. 1195:21-1203:6.
- The same things happened with Dr. Evans’ meeting with Mr. Babyak, Bloomberg’s chief lobbyist, and two or three other Bloomberg employees. Tr. 1153:10-14; Tr. 1221:21-1222:8; Tr. 1223:19-1224:7. They discussed “the depth-of-book data available to customers,” which “customers purchase -- or use -- multiple depth-of-book products,” “the importance of depth-of-book data products for traders,” Bloomberg’s redistribution of depth data to its customers, and how *some* customers use multiple depth-of-book products. Tr. 1227:8-1229:2.
- Dr. Evans acknowledged that SIFMA members have information concerning the depth-of-book products that they purchase from exchanges, but he did not ask for this data. Tr. 1166:21-1167:7. He was also informed by Bloomberg, in a meeting set up specifically to address customers substituting depth products, that some customers use multiple major exchanges’ depth products, but not all. Tr. 1228:23-1229:1. Yet again, Dr. Evans decided in advance not to rely on what he would be told and failed to ask for any data.

4. Prof. Donefer’s Screenshots Do Not Support His Opinion That Depth Products Are Not Interchangeable

SIFMA has criticized NYSE Arca for not providing documents that contain “any

of their depth-of-book data.” See SIFMA Pre-Hearing Brief at 2.⁴⁰ But observing the ArcaBook feed is not practical or relevant to anything at issue in this proceeding—ArcaBook is a real-time feed that consists of 200-300 million displayable limit orders per day, distributed at a peak rate of approximately 175 million bits per second (Tr. 26:2-23); it is like a “fire hose” that is readable only by machines, not humans (Tr. 29:12-17). Few market participants have the resources to handle this enormous amount of data, which requires significant bandwidth, specialized hardware, software to process the data, and staff to write the software to process the data. Tr. 26:2-23; Tr. 29:18-30:16; Tr. 209:15-210:7; Tr. 1231:21-1232:10. In fact, these infrastructure costs are so significant that Prof. Donefer’s simulated trading floor cannot afford to use Nasdaq’s depth-of-book data even though Nasdaq offers that data to academic institutions for free.⁴¹

When considering what the ArcaBook feed actually is, Prof. Donefer’s screenshots do not show anything relevant:

- They show a tiny portion of the feed consisting of a fraction of the depth-of-book data for one security at one point in time. Tr. 29:4-30:13; Tr. 208:23-209:14. As even Dr. Evans agrees, they lack analytical value because “it doesn’t make any sense from an economic analysis to suggest that you need to look at these feeds themselves straight from Nasdaq or straight from [NYSE] Arca.” Tr. 1231:1-10.
- The screenshots are of a handful of securities taken at one moment in time, and are not systematic evidence of how related or substitutable various exchanges’ order books are. Tr. 172:25-174:16; Tr. 883:5-15. Prof. Donefer does not provide any evidence concerning the representativeness of (i) the selected stocks, (ii) the dates and times that the screenshots were taken, (iii) the hypothetical trading needs discussed in his report, or (iv) the market conditions shown in the screenshots. *Id.* At trial, Prof. Donefer testified that he selected these stocks based on volume, liquidity, and “name recognition” (Tr. 817:17-818:2; Tr. 881:5-882:9), but he admitted that he “didn’t have any mathematical formula” and “didn’t have any overriding logic” in compiling the

⁴⁰ This criticism is ironic in light of SIFMA’s choice to submit no evidence of trader behavior despite the D.C. Circuit’s discussion of the criticality of such evidence.

⁴¹ Tr. 964:11-966:4. Of course, not one retail investor has *ever* subscribed to the ArcaBook data feed directly from NYSE Arca. Tr. 26:2-23.

screenshots.⁴²

Compared with Profs. Hendershott and Nevo's unrebutted demonstration that most stocks trade in most markets and that markets' limit order books are correlated, Prof. Donefer's random screenshots show nothing at all.

D. The Value ArcaBook Provides To SIFMA Members Demonstrates That ArcaBook Prices Are Reasonable

SIFMA members who buy ArcaBook derive substantial revenues from it, which indicates that the prices charged are not unreasonably high. Although SIFMA members assert that the prices charged by NYSE Arca for ArcaBook are "outside a reasonable range of fees under the ['34 Act]," neither SIFMA nor its members have come forward with any evidence to support that argument—SIFMA relies entirely on nine conclusory and virtually identical declarations in support of SIFMA's efforts to justify associational standing. SIFMA Member Declarations (NYSE Arca Ex. 4) ¶ 9. But neither SIFMA nor any SIFMA member has produced evidence supporting the assertions that ArcaBook prices are unreasonably high, or that any SIFMA member is unable to afford the fees for ArcaBook. In fact, not a single one of the nine SIFMA Member Declarants has at any point, either before or after initiating this proceeding, informed NYSE Arca that they could not afford to purchase ArcaBook data. Tr. 78:2-79:7.

Also missing from SIFMA's case is any acknowledgement that SIFMA members use depth-of-book data for profit-making activities. A few examples will explain why the

⁴² Tr. 881:17-882:9. In addition, Prof. Donefer cannot even verify that the screenshots accurately depict what they purport to represent. The screenshots are time-stamped with only the hour and minute of each screenshot, and Prof. Donefer testified that it was possible that not all of the screenshots were taken at the same second—which is essential when attempting to depict data that changes every millisecond, faster than a human can keep pace with. Tr. 825:1-21. Worse still, Prof. Donefer did not take the screenshots himself, was not present when they were created, and has no idea what instructions were given by the Bloomberg employee who actually created the screenshots. Tr. 826:18-827:12.

Tribunal should view SIFMA's position with suspicion:

- SIFMA members resell market data like ArcaBook for a profit. In 2014, the global spend on market data, *not including market data fees paid to exchanges*, was approximately \$26.49 billion, with roughly \$12 billion spent in the Americas. NYSE Arca Ex. 90 at NYSE_ARCA_001948, NYSE_ARCA_001950; Tr. 60:3-62:8. Bloomberg's revenue alone from its sale of market data was approximately \$8.5 billion, with roughly \$3.5 billion of that revenue coming from the Americas. NYSE Arca Ex. 90 at NYSE_ARCA_001955; Tr. 62:9-24. The fact that SIFMA members (i) resell ArcaBook data for more than NYSE Arca charges and (ii) earn profits from those sales are powerful refutations of the notion that the data is overpriced.⁴³
- SIFMA members own numerous alternative trading venues and compete with exchanges for order flow. Some use depth-of-book data purchased from exchanges to do so. Through their creation of ATSS, SIFMA members have been able to enter the exchange business and compete with the Exchanges for trade executions *and* the sale of depth-of-book data. Accordingly, SIFMA members earn substantial profits by using the exchanges' proprietary market data to run competing venues—they use the Exchanges' market data to compete with the Exchanges for order flow itself. Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶ 44; Ordovery Report (NQ Ex. 601) ¶ 11.
- Even though retail investors do not need depth-of-book data, broker-dealers want the ability to give that data to customers to incent those customers to make more trades and thus generate more commissions for the broker-dealers. NYSE Arca Exs. 87, 92, 93; Tr. 49:21-53:6; Tr. 56:25-59:3; Tr. 182:6-183:11; Tr. 318:9-319:10. Put differently, broker-dealers want lower depth-of-book prices to subsidize *their* customer-facing businesses.

Of course SIFMA provided no information from its members about these issues despite the fact that the value derived from market data is directly relevant to whether its price is reasonable.⁴⁴

E. Profit Margins Are Not Useful For Assessing Market Power

⁴³ Fees paid to vendors like Bloomberg and Thompson Reuters have been reported to be between 65% and 80% of a market data consumer's spending, as compared to just 8% to 15% for fees paid to exchanges. Atradia Report (NYSE Arca Ex. 66) at 21, 23. What market data purchasers do with the data they buy from the Exchanges is an important question SIFMA would rather not address. And the reason is obvious—the market participants who buy this data from the Exchanges profit from using the data. *Id.* at 23; *see also* NYSE Arca Ex. 104 (big market data issue is “what brokers and managers are doing with data and how they are using it to improve their trading...or profits”).

⁴⁴ *See* Clark Declaration (NYSE Arca Ex. 5) ¶¶ 3-4; NYSE Arca Ex. 90 at NYSE_ARCA_001948, NYSE_ARCA_001950, NYSE_ARCA_001955; Tr. 60:3-62:8.

SIFMA relies on dicta from *NetCoalition I* to assert that NYSE Arca’s “profit margins” on depth-of-book data products should be used to assess “market power.”⁴⁵ But “profit margins” reflect pricing above accounting costs, and provide a measurement of accounting profits (not economic profits), which are not evidence of market power. Accounting measures simply demonstrate whether a company is making a return sufficient to make it worthwhile to keep making and selling a product. Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶ 94. Earning accounting profits does not suggest that a market is not competitive. *Id.*

In the real world, where products are differentiated, the price of a good does not equal the marginal cost of producing it. Tr. 301:17-303:18. Such an approach is particularly unworkable where, as here, market data and trade executions are joint products. *Id.* And even where some cost data is available (as with Nasdaq), it relates to accounting cost and not economic cost. *Id.* Modern economics has thus shifted away from the “cost plus” form of regulation because it distorts the market and creates inefficiencies in investment. Tr. 303:19-305:24; Tr. 379:7-380:25. The correct way to determine the appropriate price of market data is to let a competitive market determine that price, which is exactly what NYSE Arca does. *Id.*

In the end, SIFMA’s argument in support of a “profit margin” approach to setting reasonable fees crumbled at trial:

- Dr. Evans conceded that there are “major problems” with using a company’s profit margins to determine whether it has market power (Tr. 1132:8-1133:23) and testified that he did “not put much weight on the price cost margin.” Tr. 1133:24-1134:15.

⁴⁵ In *dicta*, the D.C. Circuit suggested that pricing above marginal cost could be an indication that a market is non-competitive. *NetCoalition I*, 615 F.3d at 537 (“We do not mean to say that a cost analysis is irrelevant. On the contrary, in a competitive market, the price of a product is supposed to approach its marginal cost.”). However, the court failed to take into consideration that depth-of-book data is a joint product. *See id.* at 541, n. 16 (noting that the court was not considering the joint products theory). Even if the court’s statement had validity in a non-joint product scenario, it has no validity for joint products, which is what all the experts agree is the situation here.

- Dr. Evans also backed away from his assertion that the “marginal cost of collecting and distributing depth-of-book data, inclusive of a competitive return, would provide a proxy for a reasonable price.” Evans Report (SIFMA Ex. 377) ¶ 77. Dr. Evans himself has strongly criticized cost-based regulation, writing that such an approach is completely arbitrary. Tr. 1079:17-1080:21.
- Indeed, Dr. Evans has criticized price regulation as necessary “only when substantial departures from perfect competition are essentially unavoidable in what are commonly called natural monopolies”—and he conceded that the Exchanges’ businesses are *not* natural monopolies. Tr. 1084:19-1085:13.
- Dr. Evans admitted that “price regulation is not the ideal form of regulation” and that “regulation often has unanticipated costs and rarely, if ever, has unanticipated benefits.” Tr. 1081:24-25; Tr. 1083:7-11.
- Dr. Evans effectively retracted his opinion that the SEC should set marginal cost plus a competitive return as an appropriate method of pricing ArcaBook, testifying that “I didn’t see my task ... in this report as really saying in any kind of precise way what I was recommending the SEC do in the event that there’s an issue concerning how to go about calculating the appropriate price.” Tr. 1173:10-20.

Whether or not NYSE Arca earns a profit selling ArcaBook, it is far less than what SIFMA members like Bloomberg earn from purchasing and/or using ArcaBook. And the existence of vigorous competition prevents NYSE Arca from setting supracompetitive prices on ArcaBook because another platform could meet NYSE Arca’s pricing on other dimensions and undercut its ArcaBook prices. Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶ 55. Because the market is competitive, the SEC need not and should not engage in rate-making just because SIFMA members would like to pay less for market data to boost their own margins and enhance their positions as the Exchanges’ direct competitors.⁴⁶

III. THERE IS NO SUBSTANTIAL COUNTERVAILING BASIS TO DETERMINE THAT NYSE ARCA’S PRICING OF ARCABOOK VIOLATES THE ‘34 ACT OR SEC RULES

SIFMA cannot meet its burden of establishing a “substantial countervailing basis

⁴⁶ SIFMA’s use of the legal system to try to gain an unwarranted competitive advantage is a tactic that Dr. Evans acknowledges is prevalent among competitors in the information technology arena. Tr. 1076:10-1077:1.

to find that the terms [of the ArcaBook Filing] violate the [‘34] Act or SEC rules.” *NetCoalition I*, 615 F.3d at 532. Its arguments (i) have already been rejected by the SEC, (ii) are contrary to un rebutted record evidence, and (iii) amount to general pleas to public policy that have no place in a denial of access proceeding.

A. The Vast Majority Of Investors Do Not Need Depth-Of-Book Data

SIFMA’s arguments are in large part based on the false premise that most investors need depth-of-book data from most exchanges. Although Prof. Donefer initially argued that depth-of-book data are competitively essential for institutional investors, broker-dealers, and short term traders, (Donefer Report (SIFMA Ex. 376) ¶¶ 36, 60-61) and even argued that depth-of-book data are critical for many retail investors (*id.* ¶ 62), those opinions disintegrated on cross-examination:

- Prof. Donefer’s assertion that specialized trading strategies make depth-of-book data “necessary” for short-term traders, wholesale dealers, market makers, and firms that trade on mathematical models was based *entirely* on anecdotal evidence from conversations he had with unnamed industry participants at unknown times. Tr. 909:2-910:8. He made no attempt to quantify how many market participants find depth-of-book data essential or the trading volume of these participants (and he made no effort to dispute the evidence NYSE Arca submitted on these issues). He also fails to quantify the proportion of the market that subscribes to ArcaBook (or any depth-of-book data product) and offers no explanation for why so many traders do not purchase any depth-of-book product.
- Prof. Donefer admitted that not all institutional investors, pension funds, mutual funds, insurance companies, and large charitable and educational endowments need to buy depth-of-book data, and whether a specific one does or not depends on its specific trading strategy. Tr. 915:8-919:14.
- Prof. Donefer admitted that depth-of-book data is not essential for any retail investors, but that it could be useful to retail investors if “they learn how to use it” following a public education campaign.⁴⁷

⁴⁷ Tr. 925:5-927:3. Given their knowledge of depth-of-book products, Messrs. Brooks and Albers would be in a particularly good position to use depth-of-book data, but neither has ever used depth-of-book data when trading equity securities for their personal accounts. Tr. 24:25-25:14; Tr. 440:17-22.

- Prof. Donefer speculated that the market data fees paid by large institutional investors and broker-dealers could “trickle down” to retail investors in the form of higher fees and expenses charged through mutual funds (Tr. 999:11-1003:9), but he had no evidence to support that. That is not surprising for two reasons. *First*, the largest depth-of-book data customers do very little investing with respect to mutual funds. NQ Ex. 615; Tr. 1347:5-1348:25. *Second*, the evidence shows that broker-dealers do *not* pass depth-of-book fees on to customers. NYSE Arca Exs. 87, 88, 92, 93.
- Prof. Donefer’s hypothetical example of an investor who needs depth-of-book data (Donefer Report (SIFMA Ex. 376) ¶ 43)—an investor submitting an intermarket sweep order (“ISO”)—disproves his theory, because (i) ISOs are “typically used by institutional algorithmic investors, not retail investors” (ArcaBook Filing (NYSE Arca Ex. 1) at 13 & n. 23) and (ii) SIFMA’s own members admit that not all algorithmic traders need any depth data at all (NQ Ex. 508).

In contrast, actual trader behavior establishes that most market participants neither need nor want depth-of-book data. Only a small number of market participants subscribed to ArcaBook *even when the data itself was free*. ArcaBook Filing (NYSE Arca Ex. 1) at NYSE_ARCA_000145; Tr. 66:17-22; Tr. 90:13-22. There are also a number of investors who purchase only one depth product. *See supra* § II.C.1-2. And depth-of-book data is implicated in only a small percentage of trades, because 96.7% of trades occur at or within the NBBO.⁴⁸ This evidence supports the SEC’s previous conclusions that “depth-of-book data is most accurately characterized as useful, but not necessary, for professional traders” and that ArcaBook data is “both too narrow and too broad to meet the needs of most retail investors.” ArcaBook Approval

⁴⁸ Hendershott-Nevo Report (NYSE Arca Ex. 65) ¶ 29. Prof. Donefer disputes the importance of this figure, arguing that order size can be larger than what is available upon execution. Donefer Report (SIFMA Ex. 376) ¶ 63. That gets SIFMA nowhere. Although some traders may sometimes have orders larger than the size shown at the NBBO, those trades are actually executed at or within the NBBO except for 3.3% of the time. Tr. 169:21-172:12. This means that there is no obvious value in depth-of-book data for most traders because regardless of size, their orders are mostly executing at prices at or within the NBBO. That the vast majority of trades execute at or better than the NBBO is widely known. Indeed, broker-dealers advertise their own execution quality with nearly identical figures, which are calculated in exactly the same manner as the 96.7% figure cited in the Hendershott-Nevo Report. Tr. 171:9-172:24. In any event, the old study Prof. Donefer relies upon was discredited by the SEC. *See* ArcaBook Approval Order (NYSE Arca Ex. 46) at 77-97.

Order (NYSE Arca Ex. 46) at 94, 107. SIFMA has submitted no contradictory evidence.

B. Investors Who Need NYSE Arca Order Imbalance Data Can Obtain It Free From Sources Other Than ArcaBook

SIFMA incorrectly asserted that most retail investors need ArcaBook because it is “essential to many market participants” who participate in NYSE Arca opening and closing auctions. Donefer Report (SIFMA Ex. 376) ¶¶ 35, 55, 65; Tr. 833:8-834:4. But Prof. Donefer could not point to any investor, other than a large institutional investor, who would be interested in participating in auctions on NYSE Arca.⁴⁹

Prof. Donefer testified that real-time order imbalance data (*i.e.* the fastest data available) was necessary to participate in an auction on NYSE Arca, and that ArcaBook “provide[s] the only ‘order imbalance’ information about the exchanges’ respective daily open and close auctions in a real-time, low-latency feed.” Donefer Report (SIFMA Ex. 376) ¶ 55; Tr. 834:5-12; Tr. 835:20-837:21. But the only document he relied on for this statement (*id.* ¶ 55, n. 29) proves him wrong—real-time order imbalance data is also made available, for free, on NYSE Arca’s website.⁵⁰ The information published on the website (in real-time and for free) includes market imbalance, total imbalance, matched volume, and indicative match price, which is precisely the information that Prof. Donefer believes is necessary to participate in a closing auction on NYSE Arca. NYSE Arca Ex. 96; Tr. 842:3-6; Tr. 845:16-17. Although Prof.

⁴⁹ Tr. 844:3-845:5. This is not surprising. Auction imbalance data is simply not a very important component of depth-of-book data. Tr. 192:13-193:1. The only investors who need that data are sophisticated entities whose trading strategy is to provide liquidity at the close based on complex modeling. Tr. 191:1-192:12; Tr. 887:9-888:7. Even mutual funds (which make up a significant percentage of trading volume in the closing auction) only participate in closing auctions to make sure that they trade at the closing price—a strategy that does not implicate depth or order imbalance data. Tr. 187:23-192:12. Demand for order imbalance is particularly low on NYSE Arca because it primarily lists ETFs. Tr. 192:13-20.

⁵⁰ NYSE Arca Ex. 96 at NYSE_ARCA_002059; Tr. 838:2-840:14.

Donefer speculated that obtaining this data via ArcaBook instead of NYSE Arca's website could be faster, he did no tests to support that speculation, and he conceded that "real-time" data delivery is the fastest way to obtain data.⁵¹

C. Broker-Dealers Do Not Need Depth-Of-Book Data To Route Customer Orders

Prof. Donefer argues that, because of best execution obligations, "it is not an option" for broker-dealers, institutional investors, or short-term traders "to move any significant portion of their orders to a different exchange simply because they object to the price of an exchange's depth-of-book data products." Donefer Report (SIFMA Ex. 376) ¶ 69. According to Prof. Donefer, all broker-dealers need depth-of-book data from all major exchanges because of their best execution obligations.⁵²

As an initial matter, the SEC has already decided that broker-dealers do not have to buy depth data to satisfy their best execution obligations.⁵³ Prof. Donefer also conceded that broker-dealers do not have to route order flow to exchanges at all, and that they do not violate their best execution obligations when they elect not to do so. Tr. 936:8-938:9. In fact, "most retail brokers" route their orders away from exchanges, often to entities that do not provide any

⁵¹ Tr. 834:5-12; Tr. 840:15-841:20. Prof. Donefer's other arguments concerning latency are also wrong. NYSE Arca sends data to the SIP at the exact same time it sends the data to its proprietary data feeds. Tr. 45:3-46:23. Although the most direct way to obtain core data is directly from an exchange, an investor who wanted to obtain NYSE Arca top-of-book data faster than from the SIP feed would not need to purchase ArcaBook—that investor could obtain such data directly from NYSE Arca through the Arca BBO feed. *Id.*

⁵² Tr. 919:18-920:13. Prof. Donefer also points to a statement by a FINRA staffer in support of his best execution argument. SIFMA Ex. 371; Tr. 1054:15-1055:8. But FINRA does not require broker-dealers to obtain depth-of-book data to comply with best execution practices. Moreover, SIFMA Ex. 371 merely provides one FINRA staffer's view that FINRA may at some future point consider the possibility of focusing on depth-of-book data within the context of best execution. *Id.*; Tr. 239:3-242:12.

⁵³ ArcaBook Approval Order (NYSE Arca Ex. 46) at 75-77.

depth-of-book data at all, which is entirely consistent with their best execution obligations. Tr. 938:11-939:10. Even Dr. Evans agreed that “[o]rder flow [is] obviously portable.” Tr. 1170:4-18. And Prof. Donefer’s opinion is contrary to all the record evidence, which showed that broker-dealers can and do move large volumes of order flow at their discretion:

- Even for large broker-dealers, the use of an exchange’s depth-of-book products was not essential for routing order flow to a particular exchange. For example ██████████ purchases Nasdaq’s depth-of-book product, but in the fourth quarter of 2014 it did not route *any* nondirected orders (which account for 99 percent of its orders) to Nasdaq (or any exchange).⁵⁴
- ██████████ NQ Exs. 505, 506, 619; Tr. 932:19-936:11; *supra* § II.B.1.
- Prof. Hendershott testified that broker-dealers have discretion in how they route their orders, even when taking into account Regulation NMS’s order protection rule. Tr. 194:1-196:12. And that rule does not affect where market participants can send non-marketable limit orders. *Id.*
- Prof. Donefer’s argument is contradicted by the fact that new exchanges and ATSS have entered the market; if institutional features prevented market participants from moving order flow, then these new venues could not have been established. Tr. 194:1-196:12.

Prof. Donefer’s opinions cannot be squared with the record.

D. NYSE Arca’s Depth-Of-Book Data Does Not Belong To SIFMA Members

SIFMA has suggested that ArcaBook data belongs to SIFMA members and other investors that submit displayable limit orders to NYSE Arca.⁵⁵ This is wrong. The data that NYSE Arca sells in the ArcaBook feed does not belong to market participants that submit displayable limit orders, because customers purchase ArcaBook to view limit orders submitted

⁵⁴ SIFMA Ex. 369; Tr. 183:12-187:22. Indeed, Schwab has apparently had a contractual agreement to send the vast majority of its order flow to UBS since 2004. *See Lim v. Charles Schwab & Co., Inc.*, Case No. 3:15-cv-02074-EDL (N.D. Cal., filed May 8, 2015), Complaint ¶¶ 1, 8-34.

⁵⁵ *See* Brief of Petitioners NetCoalition and SIFMA, *NetCoalition I*, (D.C. Cir. Jan. 4, 2010) at 7-8 (“Exchanges do not create that data; they simply aggregate the data on trades, bids, and offers that broker-dealers are required by law to report to them for free ... broker-dealers must then buy that data back from the exchanges”).

by *other* market participants, not themselves. Tr. 31:9-19.

E. SIFMA's Arguments Are Contrary To Public Policy

Despite pursuing its fee challenge as a denial of access proceeding, SIFMA has abandoned the position that the prices for depth-of-book data are so high that some entities are “denied access” to depth-of-book data. No one has asserted that any SIFMA member is unable to purchase the data, and SIFMA provided no evidence to support such a claim. Tr. 78:2-79:7. In itself, that requires denial of the SIFMA Application.

SIFMA falls back on an assertion by Dr. Evans that, by making depth-of-book data more widely available, “the public benefits from more efficient and transparent financial markets.”⁵⁶ Aside from the fact that Dr. Evans does not explain how wider dissemination of data that is only potentially relevant to a small minority of transactions would do that, the result of adopting SIFMA’s argument would be the opposite. That is, under Dr. Evans’ own theory, transparency would be reduced. Dr. Evans asserts that the Exchanges price depth-of-book data products high to enable them to charge low transaction execution prices. But under that theory, lowering depth-of-book data prices would result in greater costs to trade at the Exchanges, which would harm those who transact without using depth data while subsidizing those who do use it. And assuming Dr. Evans’ theory for the sake of argument only, higher trading costs would likely cause order flow on the Exchanges to decrease and be redirected to unlit venues (again, run by SIFMA members), an outcome SIFMA recognizes is likely because “[d]epth-of-book data and

⁵⁶ Evans Report (SIFMA Ex. 377) ¶ 17. But depth-of-book data is costly to process and store, and there is no consensus that it is in the public interest to make this massive amount of data more widely available. Tr. 208:5-22. As Prof. Donefer conceded, the public would need to “learn how to use” depth data. Tr. 925:5-927:3. Moreover, depth-of-book data is used by only a very small and specialized group of traders, and Dr. Evans confuses the public interest with the interests of this very small group of traders, who also happen to be SIFMA members. Tr. 305:25-306:16.

order flow are interdependent.” Evans Report (SIFMA Ex. 377) ¶ 56. Not only would markets become less competitive and less efficient, trading would become more concentrated on unlit venues, *reducing* transparency. Although it would benefit SIFMA’s members, that would not benefit *investors*. Nor is this is the forum to pursue such a radical restructuring of the securities regulation regime, especially given SIFMA’s choice to submit no evidence.

CONCLUSION

For all the foregoing reasons, NYSE Arca respectfully submits that the SIFMA Application should be dismissed.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on June 5, 2015, I caused a copy of the foregoing Post-Hearing Brief of NYSE Arca, Inc. to be served on the parties listed below via the methods set forth for each recipient.

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