UNITED STATES OF AMERICA
Before the
SECURITIES AND EXCHANGE COMMISSION

ADMINISTRATIVE PROCEEDING
File No. 3-16978

In the Matter of

Behruz Afshar, Shahryar Afshar,
Richard F. Kenny, IV, Fineline Trading
Group LLC, and Makino Capital LLC,

Respondents.

REPORT OF TERRENCE JOHN HENDERSHOTT, PH.D.

March 28, 2016

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I.   Qualifications

My name is Terrence Hendershott. I am a Professor at the Haas School of Business at the University of California, Berkeley, where I hold the Cheryl and Christian Valentine Chair.

My expertise and research interests include the role of information technology in financial markets, electronic communications networks and financial market design, regulation of financial markets, and algorithmic and high-frequency trading. I have published numerous articles on the impact of information technology on financial markets, the structure and regulation of financial markets, how information is incorporated into security prices, and algorithmic and high-frequency trading in leading economics and finance journals, including *Journal of Finance, Journal of Financial Economics, Review of Financial Studies,* and *Review of Economic Studies.* I have received awards from the Western Finance Association and the Financial Management Association for my research on electronic trading and algorithmic trading. I received a CAREER grant award from the National Science Foundation for studying electronic trading systems in financial markets.

I teach undergraduate- and graduate-level courses at the Haas School of Business on operations management, information technology strategy, and high-frequency finance. I serve on the editorial boards of leading operations management and finance journals, such as *Management Science, Journal of Financial Markets,* and *Decision Support Systems.*

In addition to my academic work, I have served as the visiting economist at the New York Stock Exchange from 2005 to 2006, as a member of the NASDAQ Economic Advisory Board from 2004 to 2007, and as chair of the NASDAQ Economic Advisory Board in 2007. I have also consulted for a number of high-frequency trading firms and investment firms.

A detailed listing of my educational background and publications is set forth in my curriculum vitae, which is attached to this declaration as **Appendix A**. I am being compensated for my time and services in this matter at the hourly rate of $600. Certain employees of Analysis Group working under my direction and supervision have provided support and assistance in preparing this report, including analyzing Respondents' trading records. My compensation is not contingent on the opinions that I express or the outcome of this litigation.

My opinions, and the bases for them, are expressed in this Report (and associated exhibits). In preparing this Report, I have drawn on my education, knowledge, and experience in financial markets, electronic trading, algorithmic trading, and derivatives products. I have also relied upon Respondents' trading records and other materials produced in this litigation as well as various industry publications and other publicly available material. A list of documents and materials considered by me and individuals working under my direction and supervision in the preparation of this report is set forth in **Appendix B**.

II.   Overview of the Allegations

The Division of Enforcement of the Securities Exchange Commission (the "Division") has made two primary allegations against Respondents.[1] First, the Division alleges that between May 2011 and December 2012, Respondents engaged in manipulative trading to collect rebates from the Philadelphia Stock Exchange ("PHLX").[2] Specifically, the Division alleges that Respondents placed non-bona fide orders (in the form of displayed small-lot orders ("SLOs")) with the objective of inducing the execution of other, undisplayed "All or None" orders ("AONs") they had placed in order to receive liquidity rebates.[3] Second, the Division alleges that Respondents improperly alternated their options trading activity across accounts in order to maintain a "customer" rather than "professional" designation, thereby obtaining priority of execution at the expense of other market participants and avoiding transaction fees.[4, 5]

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[1] Order Instituting Administrative and Cease-And-Desist Proceedings Pursuant to Section 8A of the Securities Act of 1933, Sections 15(b) and 21C of the Securities Exchange Act of 1934, and Section 9(b) of the Investment Company Act of 1940 and Notice of Hearing against Behruz Afshar, Shahryar Afshar, Richard F. Kenny, IV, Fineline Trading Group LLC, and Makino Capital LLC ("Order").

[2] The Division alleges Respondents' trading activity violated Sections 17(a)(1) and 17(a)(3) of the Securities Act and Sections 9(a)(2) and 10(b) of the Exchange Act and Rules 10b-5(a) and 10b-5(c) thereunder. (Order, p. 17.)

[3] AONs are only executed if the entire order can be filled at the specified price. According to PHLX rules during the relevant time period, AONs were not displayed and therefore would have no effect on the Best Bid Offer ("BBO").

[4] I understand this trading activity occurred on several exchanges, including Chicago Board Options Exchange ("CBOE"), American Stock Exchange ("AMEX"), International Securities Exchange ("ISE"), and PHLX. (Order, p. 2.)

[5] The Division alleges Respondents' improper account-designation activity violated Sections 17(a)(1) and 17(a)(2) of the Securities Act and Section 10(b) of the Exchange Act and Rules 10b-5(a), 10b-5(b), and 10b-5(c) thereunder. (Order, p. 16.)

III.   Assignment

With respect to the Division's manipulative trading allegations, I have been asked to: (a) review Respondents' trading activity to determine if it is consistent with the Division's allegations; (b) identify specific trades that follow the pattern of trading activity specified by the Division; (c) explain how Respondents could induce other market participants to fill Respondents' AON orders and earn rebates by placing SLOs on the other side of the market; and (d) calculate Respondents' unjust enrichment from the identified trades (*i.e.*, rebates received). With respect to the Division's improper account-designation allegations, I have been asked to calculate the transaction fees avoided by Respondents by designating trades as "customer" rather than "professional" for specific accounts and time periods.

IV.   Summary of Conclusions

Based on my review and analysis of Respondents' trading data, I have concluded that Respondents' trading activity over the May 2011 to December 2012 time period is consistent with the Division's allegations of manipulative trading. Specifically, Respondents placed displayed SLOs to induce the execution of their other, undisplayed AONs in order to receive liquidity rebates on the PHLX for the executed AONs. This is supported by the following observations:

- Respondents' AON trading activity on the PHLX began when Respondents were given access to the AON order type, became aware of the ability to earn liquidity rebates on undisplayed AONs, and learned that there were no cancelation fees associated with "customer"-designated AONs (May 2011), and ceased when the PHLX removed liquidity rebates (January 2013).

- Respondents' AON trading activity during the relevant time period occurred almost exclusively on the PHLX.

- Respondents consistently placed SLOs on the other side of the market from their larger undisplayed orders (AONs), typically in very close timing.

- Respondents consistently had open SLOs on the other side of the market at the same price during the times their larger executed undisplayed orders (AONs) were open.

- Respondents' AON trading activity was restricted to six securities associated with the alleged scheme and generally involved "out of the money" options, thereby reducing their price risk on executed undisplayed AONs.

- Among the At-Issue Trades,[6] Respondents replaced executed SLOs with new SLOs when the corresponding AONs had not yet executed.

- Among the At-Issue Trades, Respondents quickly canceled the large majority of SLOs after the corresponding AONs were executed.

- At-Issue Trades occurred on 92 percent of the trading days between May 2011 and December 2012 and resulted in 810,549 executed AON contracts.

As I will discuss in my report, these facts support the conclusion that Respondents placed displayed SLOs in order to induce other market participants to execute against their undisplayed AONs, thereby receiving liquidity rebates. I calculate $204,779 in liquidity rebates received by Respondents on the executed AONs associated with the scheme. In addition, I find that Respondents avoided $3,034,513 in transaction fees by designating trades as "customer" rather than "professional."

V.   Analysis of Alleged Manipulative Trading

a. Background

During the time period of interest (May 2011 – December 2012), the PHLX had in place a liquidity rebate structure that compensated traders who placed orders that provided liquidity to the market and charged traders who consumed liquidity.[7] This rebate structure is known as "maker-taker" after its designation of trades as either "making" or "taking" liquidity. For example, suppose the current market pricing for a particular security is a bid of $1 and an offer of $1.20. A trader "makes" liquidity if he improves the bid (by placing an order to buy at $1.05) or the offer (by placing an order to sell at $1.15). A trader "takes" liquidity, however, if he executes a trade at the existing bid-offer spread (by placing an order to sell at $1 or to buy at $1.20). In this example, the liquidity "maker" would receive a rebate while the liquidity "taker" would be charged a fee. During the period of interest, the liquidity rebates on the PHLX ranged from $0.20 to $0.26 per options contract for both "customer" and "professional" market participants.[8]

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[6] "At-Issue Trades" are defined in **Section V.C.**

[7] SEC Release No. 34-62472 dated July 8, 2010, SEC Release No. 34-65940 dated December 12, 2011, and SEC Release No. 34-68674 dated January 16, 2013.

[8] *Ibid.*

Also during this time period, the PHLX permitted AONs. AONs were only executed if a counterparty or a combination of counterparties were willing to trade the full size of the order at the specified price. AON orders remained active until they were executed or canceled. For example, if one were to place an AON to sell 10 contracts at a price of $8, the order would only be executed if there were bids for at least 10 contracts at a price of $8. According to PHLX rules in at least 2011 and 2012, AONs were not displayed and therefore would have no effect on the BBO.[9] I understand that the intention behind not displaying AONs was to avoid giving the impression of liquidity that was not actually available to all traders because partial fills of the AON trade quantity were not permitted.

b. The Alleged Scheme and Why It Worked

The Division alleges that Respondents engaged in a trading scheme that took advantage of the rules in place on the PHLX and allowed them to improperly receive liquidity rebates (resulting in other market participants such as market makers being induced into trades that resulted in their being unexpectedly charged liquidity fees). In particular, Respondents allegedly used a combination of displayed SLOs and undisplayed AONs in the same security and at the same price in order to receive liquidity rebates on executed AONs. The Division alleges that Respondents placed the SLOs with the intent of manipulating the trading behavior of other market participants such that their undisplayed AONs would be executed, thereby receiving the liquidity-adding rebates.

Both human and algorithmic traders learn from and react to the actions of other traders in financial markets.[10] For that reason, it is common to see the same type of orders following one another, e.g., an ask quote followed by another ask quote.[11] But traders' knowledge that other traders may learn from and copy their actions enables potential exploitation. Similar to how a shill bidder can induce other bidders in an auction to bid higher, traders can induce other traders to better their quote by improving the BBO.

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[9] "Q:...what's your understanding of the characteristics of [all-or-none]? A: Basically...it would only go to the PHLX...you wouldn't have any route out issues or linkage issues...it was also nondisplayed...wouldn't really show it to the market..." (Testimony of Behruz Afshar Vol. I, August 27, 2014, p. 61:9.)

[10] See Hendershott, T., and R. Riordan. "Algorithmic Trading and the Market for Liquidity." *Journal of Financial and Quantitative Analysis*, 48 (2013), 1001-1024.

[11] See Biais, B., P. Hillion, and C. Spatt. "An Empirical Analysis of the Limit Order Book and the Order Flow in the Paris Bourse." *Journal of Finance*, 50 (1995), 1655-1689.

By placing a price-improving SLO, Respondents led other market participants to believe that the tradable price of the given security was higher (lower) than indicated by the previous best bid (offer).[12] In response to Respondents' price-improving SLO, other market participants joined the improved best bid (offer) expecting to be providers of liquidity, thereby receiving the rebate.[13] The increased quantity at the new best bid or offer (*i.e.*, the price at which the SLO was placed) created sufficient quantity for Respondents' AONs on the opposite side of the market to be executed. Because the undisplayed AONs generally were placed at a price higher (lower) than that of the then-best displayed bid (offer), Respondents received liquidity rebates upon their execution. The traders who joined Respondents' SLO price anticipating being providers of liquidity (and receiving the rebate) were charged a fee for taking liquidity because the AONs had in fact been the liquidity "makers," even though they were not displayed. **Exhibit 1A** provides a hypothetical example illustrating Respondents' trading scheme.

Among the At-Issue Trades, Respondents always placed at least one SLO at the same price as their AONs. Regulation NMS does not allow for both bid and quotes to be displayed at the same price because orders to buy and sell at the same price by the same entity closely resemble wash trading.[14] Respondents' SLOs, however, did not execute against their open AONs on the other side because (a) they were for quantities less than those of the AONs and, by rule, AONs cannot be partially filled, and (b) a SLO placed on a non-PHLX exchange cannot execute against an undisplayed AON placed on the PHLX.

c. Identification of At-Issue Trades

I reviewed Respondents' trading data over the 2011 to 2013 time period to evaluate whether there is evidence of the alleged trading scheme being conducted and to identify those specific trades. The process by which I identified the sets of orders and executed trades consistent with the Division's

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[12] The SLO need not be placed on the PHLX along with the AON, but rather could be placed on any of the options exchanges. This is because a price improvement on any exchange is reflected in the BBO observed across all exchanges.

[13] "[O]ur intent is always to provide passive liquidity. So our quoting algorithm would not have intentionally put in a seven bid to interact with an offer where we know we would have removed liquidity." (Testimony of Andrew Larsen, March 10, 2015, p.59:17.)

[14] 17 CFR § 242.610(d).

description of the alleged scheme ("At-Issue Trades") is as follows.[15] In order to be considered as potential At-Issue Trades, the trades are first required to jointly satisfy the following conditions: (1) AONs must be placed on the PHLX in 2011 or 2012; (2) AONs and SLOs for the same security had to be placed and subsequently executed or canceled on the same day;[16] (3) at least one SLO is placed on the opposite side of the market as an AON for the same security on the same day; and (4) SLOs must be placed before the last executed or canceled AON for the same security on the opposite side of the market that day. I then apply the following additional joint restrictions to determine the set of At-Issue Trades: (5) SLOs are a price improvement of the best bid or offer;[17] (6) a SLO must be placed within five minutes of an AON execution or cancelation for the same security on the opposite side of the market; and (7) every AON must have a corresponding SLO for the same security on the opposite side of the market that is placed at the same price and after the AON is placed, but before the AON is executed or canceled.[18]

Using this methodology for identifying At-Issue Trades, I find that Respondents' trading is consistent with the alleged trading scheme beginning in May 2011 and continuing through December 2012. In **Exhibits 1B** and **1C**, I present two representative examples of At-Issue Trades that satisfy the criteria above.[19] The trades reported in these exhibits reflect patterns that are typical across the At-Issue Trades. Namely, Respondents first place several undisplayed AONs on the PHLX exchange. Next, Respondents place one or more SLOs either on the PHLX or on another exchange at the same price as the AONs, but on the other side of the market.[20] After the SLOs are placed, the

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[15] "Orders" refer to limit orders that are canceled rather than executed.

[16] I define SLOs as non-AONs that are placed for 50 or fewer contracts. 88 percent of the At-Issue SLOs are placed for 12 or fewer contracts.

[17] Except for a very small number of trades, BBO data provided by counsel is not available for 2013 trade data, which are then dropped in the identification of At-Issue Trades. BBO data also was not available for 47 percent of the placed SLOs meeting the above conditions (prior to condition #5 being imposed). When BBO data were not available, the SLOs were excluded from the analysis.

[18] The At-Issue Trades can include sets of orders where there is no AON execution (only cancelations) and therefore no liquidity rebates received that are included in the disgorgement calculations.

[19] As the examples illustrate, the AONs and SLOs are frequently placed in blocks of multiple orders. Since several SLOS are often placed following a block of AON placements, it is unlikely that these SLOs were placed in error. In these two examples, the same trader placed both the AONs and SLOs.

[20] Respondents placed the At-Issue SLOs on the PHLX 27 percent of the time.

AONs execute (with Respondents receiving the corresponding liquidity rebates). Finally, Respondents cancel the SLOs.[21, 22]

I find that nearly all of the At-Issue Trades (99 percent) are in options on the following six highly liquid stocks: Bank of America (BAC), Cisco Systems (CSCO), Ford (F), General Electric (GE), Intel (INTC), and Microsoft (MSFT). The majority of the At-Issue Trades are in options that are significantly "out of the money" (*i.e.*, the strike price for a call (put) option is much higher (lower) than the current price of the underlying stock).[23, 24] The prices of options that are far from being "in the money" are less sensitive to changes in the price of the underlying stock and are therefore relatively more stable.[25] By using "out of the money" options, Respondents were able to reduce their price risk on executed undisplayed AONs due to the relative price stability of "out of the money" options. The median size of the At-Issue AONs is 25 contracts, while the median size of the At-Issue SLOs is two contracts. In aggregate, I identified 31,887 executed At-Issue AONs (807,233 contracts) that received a total of $204,779 in liquidity rebates.[26, 27]

d. Evidence of the Alleged Scheme

i. Timing, Frequency, and Structure of the At-Issue Trades

The At-Issue Trades were conducted consistently over the period from May 2011 through December 2012, with an increase in volume in late 2012 (*see* **Exhibit 2** and **Exhibit 3**). At-Issue Trades were placed on 92 percent of the trading days between May 2011 and December 2012. The

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[21] "Q: And so...once your all-or-nones get filled, did you subsequently cancel the other order which enabled the all-or-nones to get filled? A: Yes." (Testimony of Scott Jacobs, January 7, 2015, p.116:11.)

[22] As discussed below, a portion of the At-Issue SLOs are executed rather than canceled.

[23] Of the At-Issue AONs, over 70 percent are out of the money by more than 4 percent. To put this in perspective, the average daily stock price change over this period of time for the six underlying stocks ranged from 1.1 percent to 2.4 percent.

[24] Stock prices are obtained using Bloomberg.

[25] In common options terminology, "out of the money" options have a lower "delta," which is calculated as the change in option price for a given change in the price of the underlying stock.

[26] 3,316 executed At-Issue AON contracts did not receive a liquidity rebate and are not included in these totals.

[27] If I remove filters #5, #6, and #7, I find 77,614 executed At-Issue AONs (2,187,735 contracts) that received a total of $551,615 in liquidity rebates.

time period of the At-Issue Trades aligns with the timing of Respondents' access to AONs and rule changes at the PHLX. On May 4, 2011, following Respondents' recent access to AONs[28] and confirmation that "customer"-designated AONs would not be assessed a cancelation fee, information was disseminated among Respondents regarding the use of AONs on the PHLX.[29] This aligns with the first occurrence of the At-Issue Trades on May 3, 2011. On January 2, 2013, the PHLX implemented a rule change that removed liquidity rebates for customer-priority accounts.[30] This rule change aligns with the abrupt end of executed PHLX AONs by the Respondents in January 2013 (see **Exhibit 4**). The link between the rule change and the change in Respondents' trading activity is discussed in correspondence among Respondents and their associates.[31]

Respondents' AON trades are almost always accompanied by SLOs and often in very close timing.[32] I find that 94 percent of all AONs executed by Respondents on the PHLX between May 2011 and December 2012 are captured by my base criteria (conditions #1 through #4 above), which

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[28] "The platform was Sterling and, you know, they -- there's different firms, I guess, certify for different features and whatnot, but that all-or-none wasn't available to us for a while. But we knew it was there 'cause I'd always say, well, how did this happen? Why didn't I get filled? And they's like, well, Philly said it was an all-or-none order. I'm like, okay, how do I get that? That's how it kind of works. That's -- you get picked off enough times you go, what's going on? I don't see this, you know. Then you ask about it and they say, oh, it's there. And then finally, you know, after a while we got the feature." (Testimony of Behruz Afshar Vol. I, August 27, 2014, p. 64:19.)

[29] " Q: Okay. So once you found out about that there would be no cancellations for customer AON orders on the PHLX, did -- did you inform your traders of this development? A: I'm assuming I did. Q: And did that at all affect your trading or their trading, you know, from a rebate perspective or from an adding liquidity perspective, once you found out about this development? A: I think just from a trading perspective from adding orders... So it wasn't really a change in the -- in the fee structure, I think, of the all-or-nones being charged for cancels or not being charged. It was just, here's an order type and then you -- you research the order type. And you're like, okay, looks like they charge for cancels. Let me make sure that's not the case. Once that's not the case then, Hey, guys, you got -- you got a new way of entering orders into the market, that's all." (Testimony of Behruz Afshar Vol. I, August 27, 2014, p. 80:19; Testimony Exhibit 153, p. 10.)

[30] SEC Release No. 34-68674 dated January 16th, 2013, p. 9.

[31] Respondent Behruz Afshar was informed by a broker at Lightspeed Trading on January 4, 2013 that the PHLX had stopped offering rebates to customer-priority accounts on all symbols, to which the Respondent Behruz Afshar replied, "...that [PHLX] will take a lot of our trade away...on to the next one [I] guess." (Testimony Exhibit 52.) One of Respondents' traders, Scott Jacobs, discovered on January 4, 2013 that PHLX had stopped offering liquidity rebates to his account, to which Respondent Behruz Afshar replied, "Bye bye All-or-None fun." (Testimony Exhibit 200, p. 5.)

[32] There are contemporaneous communications among the Respondents and their affiliates, where a trader, with open AONs, would at times ask another to help place a small-lot order on the opposite side of the market. "Scott: can you bid me a 1 lot on phlx at 4 on the nov 10? Rich Kenny: si. Scott: ty! Rich Kenny: np. We need to keep that to a minimum...but if we need it ask." (Testimony Exhibit 157, p. 2.)

"Scott: could I get some offer help? Beh Afshar: on? Scott: jan14 12...is that 1 lot you on phlx? Beh Afshar: yes." (SPJ 001303 - SPJ 001304.)

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essentially require a SLO to be placed in the same security and on the opposite side of the market as an AON on the same trading day. I find that 38 percent of all AONs executed by Respondents on the PHLX between May 2011 and December 2012 are captured by the expanded criteria (conditions #5 through #7 above), which require the more stringent conditions that the SLO be a price improvement, that the SLO be placed within five minutes of an AON execution or cancelation, and that every AON must have an accompanying SLO placed at the same price after the AON was placed, but before the AON is executed or canceled.[33, 34] In addition, 74 percent of all executed PHLX AONs had a corresponding SLO open at the same price and on the other side of the market at some point in time while the AON was open. If I exclude all AONs that execute within 30 seconds, that figure rises to 83 percent.

Consistent with the incentives created by not displaying AONs and the maker-taker rebate structure at the PHLX relative to those of other exchanges,[35] I find that nearly all of Respondents' AON trades in 2011 and 2012 occurred on the PHLX (see **Exhibit 4**) and 99.9 percent of At-Issue executed AONs received liquidity rebates.[36] After the PHLX stopped offering liquidity rebates for customer-priority accounts in early 2013, I understand that Respondents moved their AON trading to other exchanges. I also understand that the AON trading activity never reached the same scale as observed on the PHLX because the incentives were less favorable on other exchanges.[37]

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[33] Among the executed AONs that are removed by applying conditions 5 through 7, 67 percent either execute within five seconds or have a corresponding SLO at the same price for the same security on the opposite side of the market that is placed before the AON is placed and that remains open when the AON is placed.

[34] If I relax the condition that every AON must have an accompanying SLO placed at the same price after the AON was placed, but before the AON is executed to not requiring the SLO be placed at the same price the results are almost identical. Under this modified criteria, 99.96 percent of executed AONs meet the At-Issue criteria.

[35] "[T]he Philly was...along with the AMEX and the CBOE and the ISE that were customer priority exchanges... And PHLX though added the make-takes. So it was kind of nice to have a customer priority exchange and a make-take feature combined. And so that was the advantage to going on the Philly." (Testimony of Behruz Afshar Vol. I, August 27, 2014, p. 102:12.)

[36] I understand that Respondents placed AONs on other exchanges in 2011 and 2012, but to a much smaller extent. "[July 7, 2011] Scott: btw, meant to tell you, the AON trick works with C2 as well, and you get an extra 2c, not as much liquidity tho, so you gotta be smaller. Rich Kenny: ooh I like that...I put one out...got em!! 14 lot only in csco. Scott: perfect!" (Testimony Exhibit 177, p. 2.)

"[March 27, 2012] Scott: can you try a 1 lot on the offer at 5 on the may 13 C2 pls? Rich Kenny: F? BAc? Scott: [BAC] beh got it nm." (Testimony Exhibit 179, pp. 4-5.)

[37] "Q: [D]id there come a time in which the PHLX was no longer the go-to place as far as the use of all-or-nones in the sense of getting fills as well as earning rebates? A: ...in the beginning of 2013 that Philly decided to stop providing a rebate. So I think that impacted the use of Philly as an exchange. Q: And did you at that

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ii. Execution, Cancelation, and Trade Sequencing Patterns

I have examined the execution and cancelation patterns of the At-Issue SLOs and how these relate to the execution of the At-Issue AONs. Specifically, I analyzed: (a) cancelation rates of the At-Issue SLOs; (b) timing between placement of the At-Issue SLOs and their execution or cancelation; and (c) sequencing of the placement and execution or cancelation of the At-Issue SLOs and the corresponding At-Issue AONs. My findings are consistent with the Division's allegations – that Respondents placed the At-Issue SLOs to induce market participants to join at the SLO bid or offer and execute against Respondents' AON on the other side of the market in order to obtain PHLX liquidity rebates. I describe my detailed findings below.

The overall cancelation rate of the At-Issue SLOs is 67 percent, while the cancelation rate of the At-Issue AONs is only 30 percent.[38] The median period of time between placement of an At-Issue SLO and either execution or cancelation of the At-Issue SLO is 40 seconds. At-Issue SLOs that execute are open for a relatively short period of time (a median of 15 seconds) compared to At-Issue SLOs that are canceled (a median of 53 seconds). The median period of time between placement of an At-Issue AON and either execution or cancelation of the At-Issue AON is 123 seconds.

The timing of the SLO placements and cancelations is consistent with the alleged scheme in which Respondents placed the SLOs to induce the execution of the AONs. 91 percent of the At-Issue SLOs are placed while an At-Issue AON is open and at the same price. Consistent with the scheme, once open AONs are executed, the majority of the corresponding SLOs are quickly canceled. Contemporaneous communications among the Respondents also indicate coordination between

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point look to other exchanges to see whether or not the same style would work...? A: I think – I think we tried, yeah...Q: Any other exchanges that you tried? A: I think CBOE, ACE, ISE, that's -- C2 maybe." (Testimony of Scott Jacobs, January 7, 2015, p.182:5; "[AONs] are back. Now on C2 though. I would definitely test the add/take on that before firing away, plus I don't expect them to be as good as [PHLX] was." (Testimony Exhibit 201.)

[38] Apart from canceling SLOs quickly after corresponding AONs have been executed, Respondents at times placed their SLOs in "professional"-designated accounts, instead of their regular customer-priority accounts. I understand that orders from "professional" accounts have lower execution priority, which might have allowed Respondents additional time to cancel their open SLOs.

"Scott: could I get some offer help [on jan14 12]? Is that 1 lot you on phlx? Beh Afshar: Yes...I'm in a pro account so they never fill me most of the time." (SPJ 001303 - SPJ 001304.)

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traders to cancel the SLOs once the AONs were executed.[39] Among At-Issue Trades where the SLOs are placed at the same price as an open AON, 74 percent of the SLOs that are still open following an AON execution are canceled.[40] The median time to cancelation of a SLO following an AON execution is seven seconds, with 26 percent of the cancelations occurring in just two seconds or less.[41]

Among the At-Issue Trades where the SLOs are placed at the same price as an open AON, 17 percent of the SLOs are executed before any AON execution or cancelation.[42] When a SLO executes while a corresponding AON is still open and there is no other open SLO, Respondents subsequently place another SLO 49 percent of the time. The other 51 percent of the time, the AON executes almost immediately after the SLO execution (median time of five seconds), suggesting that Respondents may not have had the opportunity (or need) to place another SLO. The SLO cancelation rate rises to 83 percent after removing executed SLOs that do not have an AON execution or cancelation between the placement and execution of those SLOs.

iii.   Conclusion

Overall, my findings are consistent with the conclusion that Respondents placed the At-Issue SLOs to induce market participants to join the SLO bid or offer and execute against Respondents' AONs on the other side of the market in order to obtain PHLX liquidity rebates on the executed AONs.

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[39] For example, Respondent Behruz Afshar told trader Scott Jacobs to put in ten 50-lot AONs, instead of one 500-lot order, and stated that "[W]hen you're done we'll cancel the 1 lot. [T]hat's my offer. [C]ome here kitty kitty." (Testimony Exhibit 153, p. 16)

[40] "Q: And so...once your all-or-nones get filled, did you subsequently cancel the other order which enabled the all-or-nones to get filled? A: Yes." (Testimony of Scott Jacobs, January 7, 2015, p.116:11.)

[41] Since AONs are often placed in blocks, this is the time from the most recent executed AON to the SLO cancelation.

[42] These executions may reflect the fact that the SLOs are placed at a price improvement relative to the BBO. For low-priced options, as many of the At-Issue trades are, even a penny price improvement can represent a substantially better price in percentage terms. This may attract interest from other traders who then hit the SLO bid (or lift the SLO offer).

VI. Customer Priority versus Professional Analysis

The Division also alleges that between January 2011 and December 2012 Respondents intentionally alternated the accounts out of which they traded each quarter in order to ensure that their trades would be flagged as "customer" rather than "professional," thereby subjecting them to lower fees. A trading account would qualify as a customer account if there were no more than 390 orders placed per day on average during a calendar month in the previous quarter, and would qualify as a professional account otherwise.[43] The Division alleges that Respondents, having set up at least two sets of accounts, would place thousands of orders per day on average out of one set of accounts in the first quarter. This set of accounts would then be designated as "professional" in the second quarter. However, in the second quarter, Respondents would switch to trading out of the second set of accounts, letting the first set of accounts sit out that quarter, so they would again qualify as "customer" in the third quarter. The designation of trades as "customer" rather than "professional" allowed Respondents to avoid paying transaction fees levied on professional traders and obtain execution priority.

The Division provided me with the specific account numbers and time periods in which Respondents' trading occurred in accounts improperly designated as "customer" rather than "professional."[44] I have been asked to assume that all of Respondents' trades occurring in those accounts during those time periods should have been designated as "professional" trades, thereby incurring transaction fees. I have calculated the total contracts traded by Respondents in the identified accounts for the identified time periods (*see* **Exhibit 5A**). I then calculated the fees Respondents avoided by designating their trades as "customer" rather than "professional."

In particular, I reviewed the trade data of Fineline, Makino and Adelaide Enterprises LLC. I considered executed options trades ("Instrument" variable equal to "O" with a "Log" variable indicating order types of either "COMPLETE" or "PARTIAL") that occurred in 2011 or 2012 (based on the "Time" variable) on the CBOE or AMEX ("Destination" variable equal to "CBOE" or "AMEX"). I required the "ID" variable to be equal to one of the 37 account numbers provided to me by counsel. The contract counts are equal to the sum of the values in the "Exe Qty" field in the

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[43] "Re: Professional Orders," CBOE Regulatory Circular RG09-148, December 24, 2009.

[44] I provide a list of the account numbers in **Appendix C**.

relevant accounts and months (as provided by counsel) when the trades are executed. I multiplied the contract counts by the "professional" fees for the relevant time period (provided by counsel) in order to calculate the transaction fees avoided by Respondents. Over the relevant time period, professional order transaction fees ranged from $0.20 to $0.30 per contract at CBOE and AMEX.[45] In aggregate, I find that Respondents avoided $3,034,513 in professional order transaction fees at CBOE and AMEX (*see* **Exhibit 5B**).

March 28, 2016

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Terrence John Hendershott

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[45] SEC File No. SR-NYSEAmex-2010-36; SEC File No. SR-NYSEAmex-2012-16; SEC File No. SR-NYSEAmex-2012-17; CBOE RG10-131; CBOE RG11-153; CBOE RG11-156; CBOE RG12-049; CBOE RG12-089.

Appendix A

Terrence Hendershott

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Education
Ph.D., Operations, Information, and Technology, Graduate School of Business, Stanford University, 1999.
B.S., Mathematics and Statistics, Miami University, 1989.

Publications
- Are Institutions Informed about News? (with Dmitry Livdan and Norman Schürhoff) *Journal of Financial Economics* 117 (August 2015), 249-287.
- Click or Call? Auction versus Search in the Over-the-Counter Market (with Ananth Madhavan), *Journal of Finance* 70 (February 2015), 419-447.
- Price Pressures (with Albert Menkveld), *Journal of Financial Economics*, 114 (December 2014), 405-423.
- High-Frequency Trading and Price Discovery (with Jonathan Brogaard and Ryan Riordan), *Review of Financial Studies* 27 (August 2014), 2267-2306. Won Michael J. Brennan Best Paper Award for best paper published in *Review of Financial Studies*.
- How Slow is the NBBO? A Comparison with Direct Exchange Feeds (with Shengwei Ding and John Hanna), *Financial Review* 49 (May 2014), 313-332.
- High-Frequency Trading and the Execution Costs of Institutional Investors (with Jonathan Brogaard, Stefan Hunt, and Carla Ysusi), *Financial Review* 49 (May 2014), 345-369. Won *Financial Review* Outstanding Publication Award for 2014.
- Levelling the Trading Field (with David Easley and Tarun Ramadorai), *Journal of Financial Markets* 17 (January 2014), 65-93.
- The Intended and Collateral Effects of Short-Sale Bans as a Regulatory Tool (with Ethan Namvar and Blake Phillips), *Journal of Investment Management* 11 (2013), 5-13.
- Algorithmic Trading and the Market for Liquidity (with Ryan Riordan), *Journal of Financial and Quantitative Analysis* 48 (August 2013), 1001-1024. Won 2013 Philip Brown Prize .
- Informed Trading and Portfolio Returns (with Alex Boulatov and Dmitry Livdan), *Review of Economic Studies* 80 (January 2013), 35-72.
- Automation, Speed, and Stock Market Quality: The NYSE's Hybrid (with Pam Moulton), *Journal of Financial Markets* 14 (November 2011), 568-604.
- Does Algorithmic Trading Increase Liquidity? (with Charles Jones and Albert Menkveld), *Journal of Finance, Journal of Finance* 66 (February 2011), 1-33. Won New York Stock Exchange Euronext Award for best paper on equity trading, Western Finance Association (2008). Finalist for the Smith-Breeden Prize for best paper published in the *Journal of Finance*.
- Time Variation in Liquidity: The Role of Market Maker Inventories and Revenues (with Carole Comerton-Forde, Charles Jones, Pam Moulton, and Mark Seasholes), *Journal of Finance* 65 (February 2010), 295-

331.Won Nasdaq Award for best paper on market microstructure, Financial Management Association (2007).

- The NFL Should Auction Possession in Overtime Games (with Yeon-Koo Che), *Economists' Voice* 9 (October 2009), http://www.bepress.com/ev/vol6/iss9/art5/.
- A Comparison of Trading and Non-Trading Mechanisms for Price Discovery (with Michael Barclay), *Journal of Empirical Finance* 15 (December 2008), 839-849.
- How to Divide the Possession of a Football? (with Yeon-Koo Che), *Economics Letters* 99 (June 2008), 561-565.
- Order Consolidation, Price Efficiency, and Extreme Liquidity Shocks (with Michael Barclay and Charles Jones), *Journal of Financial and Quantitative Analysis* 43 (March 2008), 93-121.
- Market Maker Inventories and Stock Prices (with Mark Seasholes), *American Economic Review (P&P)* 97 (May 2007), 210-214.
- Automation versus Intermediation: Evidence from Treasuries Going Off the Run (with Michael Barclay and Kenneth Kotz), *Journal of Finance* 61 (October 2006), 2395-2414.
- A Model of Direct and Intermediated Sales (with Jie Zhang), *Journal of Economics & Management Strategy* 15 (Summer 2006), 279-316.
- Island Goes Dark: Transparency, Fragmentation, and Regulation (with Charles Jones), *Review of Financial Studies* 18 (Fall 2005), 743-793.
- Trade-through Prohibitions and Market Quality (with Charles Jones), *Journal of Financial Markets* 8 (February 2005), 1-23.
- Liquidity Externalities and Adverse Selection: Evidence from Trading After Hours (with Michael Barclay), *Journal of Finance* 59 (April 2004), 681-710.
- Competition Among Trading Venues: Information and Trading on Electronic Communications Networks (with Michael Barclay and Tim McCormick), *Journal of Finance* 58 (December 2003), 2637-2666. Won New York Stock Exchange Award for best paper on equity trading, Western Finance Association (2001). Nominated for the Smith-Breeden Prize for best paper published in the *Journal of Finance*.
- Price Discovery and Trading After Hours (with Michael Barclay), *Review of Financial Studies* 16 (Winter 2003), 1041-1073.
- Electronic Trading Systems in Financial Markets, *IEEE-IT Professional* 5 (Jul/Aug 2003), 10-14.
- The Future of Virtual Malls (with Patric Hendershott and Robert Hendershott), *Real Estate Finance* 18 (Spring 2001), 25-32.
- Crossing Networks and Dealer Markets: Competition and Performance (with Haim Mendelson), *Journal of Finance* 55 (October 2000), 2071-2115. Nominated for the Smith-Breeden Prize for best paper published in the *Journal of Finance*.
- Bundling and Optimal Auctions of Multiple Products (with Christopher Avery), *Review of Economic Studies* 67 (July 2000), 483-497.
- Will the Internet Reduce the Demand for Mall Space? (with Patric Hendershott and Robert Hendershott), *Real Estate Finance* 17 (Spring 2000), 41-46.

Working Papers

- Asset Price Dynamics with Limited Attention (with Albert Menkveld, Sunny Li, and Mark Seasholes).
- Market Predictability and Non-Informational Trading (with Mark Seasholes).

Books, Reviews, and Chapters

- Handbook of Economics and Information Systems (Editor), Elsevier, ISBN 0444517715.

- Implementation Shortfall with Transitory Price Effects (with Charles Jones and Albert Menkveld), chapter in High Frequency Trading: A Survival Guide, Eds. David Easley, Marcos Lopez de Prado, and Maureen O'Hara, Risk Books.
- Book Review of Econometrics of Financial High-Frequency Data, by Nikolaus Hautsch, *Quantitative Finance* (2013).

Other Publications
- Automated Trading, *Encyclopedia of Quantitative Finance*.
- Preface to the Focus Theme Section: 'Financial Market Engineering' (with Dirk Neumann, Robert Schwartz, Bruce Weber, and Christof Weinhardt), *Electronic Markets* 16 (May 2006), 98-100.
- An Economic View of Information Systems (with Krishnan Anand), Introduction to Special Issue on Information Systems and Economics, *Decision Support Systems* 41(May 2006), 683-687.
- Wall St's appeal for new rules is not altruistic, *Financial Times*, comment/op-ed, 7/21/2004, p. 13.
- Should the Outcome of a Coin Flip Mean So Much in NFL Overtime? Bid for the Ball (with Jonathan Berk), *Wall Street Journal Online*, 12/22/2003.

Honors, Awards, Miscellaneous
- Cheryl and Christian Valentine Chair, Haas School of Business, UC Berkeley (2012-)
- Barbara and Gerson Bakar Faculty Fellow, Haas School of Business, UC Berkeley (2011-2012)
- Visiting Scholar, University of Sydney (2010)
- Net Institute Grant (2009)
- Kauffman Foundation Entrepreneurship & Innovation Research Grant (2008-2009)
- New York Stock Exchange Euronext Award for best paper on equity trading, Western Finance Association (2008)
- Visiting Fellow, The Paul Woolley Centre for the Study of Capital Market Dysfunctionality, London School of Economics (2008)
- Nasdaq Award for best paper on market microstructure, Financial Management Association (2007)
- Visiting Professor, Université Paris-Dauphine (2007, 2008, 2009, 2010, 2012, 2013)
- Nasdaq Economic Advisory Board, (2004-7; Chair 2007)
- Visiting Economist, New York Stock Exchange (2005-2006)
- National Science Foundation Grant #0133848, CAREER: Electronic Trading Systems (2002-2006)
- Schwabacher Fellow (outstanding teaching and research), University of California, Berkeley (2005-2006)
- Junior Faculty Research Grant, Committee on Research, University of California, Berkeley (2001, 2003)
- New York Stock Exchange Award for best paper on equity trading, Western Finance Association (2001)
- Simon School Teaching Honor Roll, University of Rochester (2000, 2001)
- Xerox Assistant Professor, University of Rochester (1999-2001)
- Frye Fellowship, Stanford University (1992)
- Chiles Fellowship, Stanford University (1991)

Teaching Experience
- High-Frequency Finance (MFE 230X), UC Berkeley.
- Analytic Decision Modeling Using Spreadsheets (UGBA 104), UC, Berkeley.
- Information Technology Strategy (MBA 247B, ENGIN 298A, INFOSYS 290, UGBA 196), UC, Berkeley.
- Operations Management (MBA and EWMBA 204), UC, Berkeley.

- Financial Information Systems (CIS 446/Finance 446), University of Rochester.
- Investment Management and Trading Strategies (Finance 434), Simon School, University of Rochester.

Professional Service
Editorial:
- Associate Editor, *Management Science*, 2010-
- Associate Editor, *Journal of Financial Markets*, 2012-
- Co-Editor, *Journal of Economics and Management Strategy*, 2006-2013
- Associate Editor, *Information Systems Research*, 2004-5
- Associate Editor, *Decision Support Systems*, 2003-
- Advisory Editor, *Handbooks in Information Systems*, Elsevier
- Guest Editor, Focus Theme Section: 'Financial Market Engineering', *Electronic Markets*
- Guest Editor, Special Issue on Information Systems and Economics, *Decision Support Systems*

Conferences:
- Western Finance Association, program committee, 2011-
- Napa Conference on Financial Markets, program committee, 2009-
- European Finance Association, program committee, 2001-2004, 2012-
- Society for Financial Econometrics and Tinbergen University (Amsterdam) Conference on Measuring and Understanding Asset Price Changes: The Price of Liquidity, and the Liquidity of Price, program committee, 2011
- NYSE-Euronext/Dauphine University, 3rd Workshop on Financial Market Quality, organizer, 2010
- NYSE Euronext & Tinbergen Institute Workshop on Liquidity and Volatility, program committee, 2009
- National Institute of Securities Markets Conference on Structure, Microstructure and Regulation of Securities Markets, Mumbai, India, program committee, 2008
- NYSE-Euronext/Dauphine University, 2nd Workshop on Financial Market Quality, organizer, 2008
- INFORMS Conference on Information Systems and Technology, program committee, 2000-6
- Microstructure of International Financial Markets, Hyderabad, India, program committee, 2006
- FinanceCom (International Workshop on Finance Industry Enterprise, Applications & Services), program committee, 2005-

Litigation Experience
- Associate, Cornerstone Research, 1996-98.
- Confidential two-week arbitration seeking damages and injunction for misappropriation of trade secrets related to high-frequency trading. I was hired to review communications, file reports, be deposed, and testify in 2010.
- Securities Industry and Financial Markets Association for Review of Actions Taken by Self-Regulatory Organizations, SEC Administrative Proceeding File No. 3-15350. I was hired by NYSE to opine on reasonableness of proprietary market data pricing. I delivered reports in March 2015 and testified in April 2015.

Appendix B
Documents and Data Relied Upon

Legal Documents

Order Instituting Administrative and Cease-And-Desist Proceedings Pursuant to Section 8A of the Securities Act of 1933, Sections 15(b) and 21C of the Securities Exchange Act of 1934, and Section 9(b) of the Investment Company Act of 1940 and Notice of Hearing against Behruz Afshar, Shahryar Afshar, Richard F. Kenny, IV, Fineline Trading Group LLC, and Makino Capital LLC

Wells Submission on Behalf of Behruz Afshar and Shahryar Afshar

Testimony and Associated Exhibits

Email Exchange dated January 28, 2013 (Testimony Exhibit 201)

IM Exchange and Trading Activity dated December 12, 2012 (Testimony Exhibit 182 and Testimony Exhibit 183)

IM Exchange and Trading Activity dated July 5, 2011 (Testimony Exhibit 175 and Testimony Exhibit 176)

IM Exchange and Trading Activity dated July 7, 2011 (Testimony Exhibit 177 and Testimony Exhibit 178)

IM Exchange and Trading Activity dated June 23, 2011 (Testimony Exhibit 154 and Testimony Exhibit 174)

IM Exchange and Trading Activity dated May 3, 2011 (Testimony Exhibit 153 and Testimony Exhibit 193)

IM Exchange and Trading Activity dated October 4, 2011 (Testimony Exhibit 157 and Testimony Exhibit 158)

IM Exchange dated January 3, 2013 (Testimony Exhibit 200)

IM Exchange dated January 4, 2013 (Testimony Exhibit 52)

IM Exchange dated July 12, 2011 (Testimony Exhibit 155)

IM Exchange dated June 28, 2012 (Testimony Exhibit 198)

IM Exchange dated March 26, 2012 (Testimony Exhibit 197)

IM Exchange dated March 27, 2012 (Testimony Exhibit 179)

IM Exchange dated May 9, 2012 (Testimony Exhibit 180)

IM Exchange dated October 3, 2012 (Testimony Exhibit 199)

IM Exchanges dated July 16, 2012 (Testimony Exhibit 145 and Testimony Exhibit 181)

Testimony Exhibit 133 (Native Version)

Testimony Exhibit 148 (Native Version)

Testimony Exhibit 158 (Native Version)

Testimony Exhibit 174 (Native Version)

Testimony Exhibit 176 (Native Version)

Testimony Exhibit 178 (Native Version)

Testimony Exhibit 183 (Native Version)

Testimony Exhibit 193 (Native Version)

Testimony Exhibit 194 (Native Version)

Testimony Exhibit 77 (Native Version) .

Testimony of Andrew Larsen, March 10, 2015

Testimony of Andrew Wallin, August 19, 2014

Testimony of Behruz Afshar Vol. I, August 27, 2014

Testimony of Behruz Afshar Vol. II, March 19, 2015

Testimony of Grant Mizuno, November 20, 2014

Testimony of Richard Kenny Vol. I, September 23, 2014
Testimony of Richard Kenny Vol. II, March 18, 2015
Testimony of Ryan Baird, November 21, 2014
Testimony of Scott Jacobs, January 7, 2015
Testimony of Shahryar Afshar, August 27, 2014

Documents Produced by Third-Parties

February 11, 2013 Email from Andrew Wallin to Behruz Afshar and Rich Kenny re February 2013 U.S. Options Exchange Pricing Matrix (SEC-Lightspeed-E-0002099 - 2102)
IM Exchange dated January 13, 2012 (SPJ 003405 - SPJ 003418)
IM Exchange dated July 25, 2012 (SPJ 001299 - SPJ 001304)
IM Exchange dated September 11, 2012 (SPJ 004272 - SPJ 004275)
January 10, 2011 Email from Andrew Wallin to Behruz Afshar re liquidity codes by exch 2010_12.xlsx (SEC-Lightspeed-E-0015441)
Lightspeed Maker-Taker Data
Lightspeed Trade Data
liquidity codes by exch 2010_12 (SEC-Lightspeed-E-0015442).xlsx
liquidity codes by exch 2014_07 (SEC-ML-E-0000580).xlsx
Merrill Lynch Maker-Taker Data
Merrill Lynch Trade Data
U.S. Options Exchange Pricing Matrix April 2012
U.S. Options Exchange Pricing Matrix August 2011
U.S. Options Exchange Pricing Matrix August 2012
U.S. Options Exchange Pricing Matrix December 2011
U.S. Options Exchange Pricing Matrix December 2012
U.S. Options Exchange Pricing Matrix February 2012
U.S. Options Exchange Pricing Matrix January 2012
U.S. Options Exchange Pricing Matrix July 2011
U.S. Options Exchange Pricing Matrix July 2012
U.S. Options Exchange Pricing Matrix June 2011
U.S. Options Exchange Pricing Matrix June 2012
U.S. Options Exchange Pricing Matrix March 2012
U.S. Options Exchange Pricing Matrix May 2011
U.S. Options Exchange Pricing Matrix May 2012
U.S. Options Exchange Pricing Matrix November 2011
U.S. Options Exchange Pricing Matrix November 2012
U.S. Options Exchange Pricing Matrix October 2011
U.S. Options Exchange Pricing Matrix October 2012
U.S. Options Exchange Pricing Matrix September 2011
U.S. Options Exchange Pricing Matrix September 2012

Documents Produced by Exchanges
BBO Data

Other Documents Provided by Counsel
Transaction Fee Chart for CBOE and AMEX

Independently Obtained Documents

"Re: Professional Orders," CBOE Regulatory Circular RG09-148, December 24, 2009
17 CFR § 242.610(d)
Biais, B.; P. Hillion; and C. Spatt. "An Empirical Analysis of the Limit Order Book and the Order Flow in the Paris Bourse." Journal of Finance, 50 (1995), 1655–1689
Bloomberg
CBOE Regulatory Circular RG10-131 dated December 17, 2010
CBOE Regulatory Circular RG11-153 dated December 1, 2011
CBOE Regulatory Circular RG11-156 dated December 5, 2011
CBOE Regulatory Circular RG12-049 dated March 28, 2012
CBOE Regulatory Circular RG12-089 dated June 29, 2012
Hendershott, T., and R. Riordan. "Algorithmic Trading and the Market for Liquidity." Journal of Financial and Quantitative Analysis, 48 (2013), 1001-1024
NASDAQ OMX, Global Data Products Combined Holidays (2013) (http://www.nasdaqtrader.com/content/technicalsupport/dataproducts/GDPcombinedholidays.xls)
SEC Release No. 34-61864 dated April 7, 2010
SEC Release No. 34-62472 dated July 8, 2010
SEC Release No. 34-65940 dated December 12, 2011
SEC Release No. 34-66561 dated March 9, 2012
SEC Release No. 34-66599 dated March 14, 2012
SEC Release No. 34-68674 dated January 16, 2013
Securities and Exchange Commission Form 19b-4, Proposed Rule Change NASDAQ OMX PHLX, Inc. 2011
Securities and Exchange Commission Form 19b-4, Proposed Rule Change NASDAQ OMX PHLX, Inc. 2012

Appendix C

List of Account Numbers Designated as "Customer-Priority" during Periods of Interest

Below is a list of calendar quarters in 2011 and 2012 and the corresponding account numbers that are designated as "customer-priority" during stated quarters.

<u>January – March, 2011</u>

- ███████████████████████████████████████
  ██████████

<u>April – June, 2011</u>

- ███████████████████████████████████████

<u>July – September, 2011</u>

- ███████████████████████████████████████
  ██████████

<u>October – December, 2011</u>

- ███████████████████████████████████████
  ████████████████████████
- ███████████████████████████████████████
  ████████████████

<u>January – March, 2012</u>

- ███████████████████████████████████████
  ████████████

<u>April – June, 2012</u>

- ███████████████████████████████████████
  ████████████████

<u>July – September, 2012</u>

- ███████████████████████████████████████
  ██████████

<u>October – December, 2012</u>

- ███████████████████████████████████████
  ████████████████

Exhibit 1A
Simplified Depiction of Alleged Scheme

Time 0	Lots	Price	Time 1	Lots	Price	Time 2	Lots	Price	Time 3	Lots	Price	Time 4	Lots	Price	Time 5	Lots	Price
Offers			Offers			Offers			Offers			Offers			Offers		
mkt	100	0.08	mkt	100	0.08	mkt	100	0.08	mkt	100	0.08	mkt	100	0.08	mkt	100	0.08
mkt	100	0.07	mkt	100	0.07	mkt	100	0.07	mkt	100	0.07	mkt	100	0.07	mkt	100	0.07
mkt	100	0.06	mkt	100	0.06	mkt	100	0.06	mkt	100	0.06	mkt	100	0.06	mkt	100	0.06
						SLO: SELL	1	0.05	SLO	1	0.05	SLO: CANCELED	1	0.05			
									mkt: SELL/FILLED	10	0.05						
			AON: BUY	10	0.05	AON	10	0.05	AON: FILLED	10	0.05						
mkt	100	0.04	mkt	100	0.04	mkt	100	0.04	mkt	100	0.04	mkt	100	0.04	mkt	100	0.04
mkt	100	0.03	mkt	100	0.03	mkt	100	0.03	mkt	100	0.03	mkt	100	0.03	mkt	100	0.03
mkt	100	0.02	mkt	100	0.02	mkt	100	0.02	mkt	100	0.02	mkt	100	0.02	mkt	100	0.02
Bids			Bids			Bids			Bids			Bids			Bids		

Time

0 Prior to the start of the alleged scheme, the market's best bid-offer spread is $0.04 - $0.06 (i.e., market participants are willing to buy the securities at $0.04 and willing to sell at $0.06).

1 Respondents place an All or None order ("AON") to buy (an undisplayed order that must be executed in its entirety or not at all) at $0.05. The bid-offer spread remains at $0.04 - $0.06, because the undisplayed AON is not reflected as a public bid or offer.

2 Respondents then place a small-lot order ("SLO") to sell in the same option and price as the larger AON, but on the opposite side of the market, narrowing the best bid-offer spread to $0.04 - $0.05. Even though both of Respondents' AON and SLO are now open at the same price, they don't trade with each other because (a) the SLO is too small or (b) a non-PHLX SLO cannot pick up the undisplayed AON on PHLX.

3 Other market participants, seeing the improved best bid-offer, join the SLO on multiple exchanges, offering to sell at $0.05, hoping to provide liquidity and receive liquidity-adding rebates. However, those market participants' orders on PHLX immediately execute against Respondents' undisplayed AON that is open. Because Respondents' AON was placed before the other market participants' orders, Respondents are deemed to have added liquidity, and thus receive rebates. Other market participants remove liquidity, thereby paying liquidity fees.

4 Once the AON is filled, Respondents cancel the SLO.

5 After the alleged scheme is carried out, the market returns to its initial conditions.

Exhibit 1B
Example 1 of At-Issue Trades[3],[4]

Time	Order ID	Order Type	Order Quantity	Order Price	Execution Price	Execution Quantity	Exchange	AON/ SLO	Adds Liquidity	Account ID	Trader ID
9:40:59 AM	60933708	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:00 AM	60933712	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:12 AM	60933746	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:14 AM	60933749	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:15 AM	60933755	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:16 AM	60933760	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:16 AM	60933765	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:17 AM	60933767	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:17 AM	60933768	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:17 AM	60933769	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:18 AM	60933770	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:18 AM	60933771	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:19 AM	60933772	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:19 AM	60933774	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:20 AM	60933776	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:20 AM	60933777	BUY	10	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:22 AM	60933782	BUY	7	0.05	0	0	PHLX	AON	-	███	TNMAKINO5
9:41:27 AM	60933788	SELL	7	0.05	0	0	C2	SLO	-	███	TNMAKINO5
9:41:31 AM	60933793	SELL	5	0.05	0	0	PSEX	SLO	-	███	TNMAKINO5
9:42:00 AM	60933708	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:01 AM	60933712	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:01 AM	60933746	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:01 AM	60933749	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:01 AM	60933755	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:01 AM	60933760	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:01 AM	60933765	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:01 AM	60933767	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:01 AM	60933782	COMPLETE	7	0.05	0.05	7	PHLX	AON	ADD	███	MlDmaTn
9:42:11 AM	60933768	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:11 AM	60933769	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:11 AM	60933770	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:11 AM	60933771	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:11 AM	60933772	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:11 AM	60933774	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:11 AM	60933776	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:11 AM	60933777	COMPLETE	10	0.05	0.05	10	PHLX	AON	ADD	███	MlDmaTn
9:42:16 AM	60933788	CANCEL	7	0.05	0	0	C2	SLO	-	███	TNMAKINO5
9:42:16 AM	60933793	CANCEL	5	0.05	0	0	PSEX	SLO	-	███	TNMAKINO5

Notes:

[1] All or None orders ("AONs") are orders that must be executed in their entirety or not at all.

[2] Small-lot orders ("SLOs") are non-AONs that are placed for 50 or fewer contracts.

[3] The orders in this example are for call options in GE with a strike price of $20.00 (February 18th, 2012 expiration) and were placed and executed, partially filled, or canceled on January 31st, 2012.

[4] At-Issue Trades must jointly satisfy the following criteria: (1) AONs must be placed on the PHLX in 2011 through 2012; (2) AONs and SLOs for the same security that were placed and subsequently executed or canceled on the same day; (3) at least one SLO is placed on the opposite side of the market as an AON for the same security on the same day; (4) SLOs must be placed before the last executed or canceled AON for the same security on the opposite side of the market that day; (5) SLOs are a price improvement of the best bid or offer; (6) a SLO must be placed within five minutes of an AON execution or cancelation for the same security on the opposite side of the market; and (7) every AON must have a corresponding SLO for the same security on the opposite side of the market that is placed at the same price and after the AON is placed, but before the AON is executed or canceled.

Sources:

[A] Lightspeed Trading Data.

[B] BBO Data.

Time	Order ID	Order Type	Order Quantity	Order Price	Execution Price	Execution Quantity	Exchange	AON/ SLO	Adds Liquidity	Account ID	Trader ID
11:55:49 AM	66441191	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:49 AM	66441192	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:49 AM	66441193	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:50 AM	66441194	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:50 AM	66441195	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:50 AM	66441196	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:50 AM	66441197	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:50 AM	66441198	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:50 AM	66441199	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:50 AM	66441200	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:50 AM	66441201	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:51 AM	66441202	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:51 AM	66441203	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:51 AM	66441204	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:55:56 AM	66441210	SELL	2	0.02	0	0	C2	SLO	-	▉	TNMAKINO5
11:55:56 AM	66441211	SELL	2	0.02	0	0	NASD	SLO	-	▉	TNMAKINO5
11:55:56 AM	66441212	SELL	2	0.02	0	0	PSEX	SLO	-	▉	TNMAKINO5
11:56:04 AM	66441191	COMPLETE	25	0.02	0.02	25	PHLX	AON	ADD	▉	MlDmaTn
11:56:04 AM	66441192	COMPLETE	25	0.02	0.02	25	PHLX	AON	ADD	▉	MlDmaTn
11:56:04 AM	66441193	COMPLETE	25	0.02	0.02	25	PHLX	AON	ADD	▉	MlDmaTn
11:59:23 AM	66441194	COMPLETE	25	0.02	0.02	25	PHLX	AON	ADD	▉	MlDmaTn
11:59:26 AM	66441195	COMPLETE	25	0.02	0.02	25	PHLX	AON	ADD	▉	MlDmaTn
11:59:28 AM	66441196	CANCEL	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:59:28 AM	66441197	CANCEL	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:59:28 AM	66441198	CANCEL	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:59:28 AM	66441199	CANCEL	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:59:28 AM	66441200	CANCEL	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:59:28 AM	66441201	CANCEL	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:59:28 AM	66441202	CANCEL	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:59:28 AM	66441203	CANCEL	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:59:28 AM	66441204	CANCEL	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
11:59:37 AM	66441210	CANCEL	2	0.02	0	0	C2	SLO	-	▉	TNMAKINO5
11:59:37 AM	66441211	CANCEL	2	0.02	0	0	NASD	SLO	-	▉	TNMAKINO5
11:59:37 AM	66441212	CANCEL	2	0.02	0	0	PSEX	SLO	-	▉	TNMAKINO5
12:28:39 PM	66443782	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
12:28:40 PM	66443786	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
12:28:40 PM	66443787	BUY	25	0.02	0	0	PHLX	AON	-	▉	TNMAKINO5
12:28:46 PM	66443806	SELL	1	0.02	0	0	C2	SLO	-	▉	TNMAKINO5
12:28:46 PM	66443807	SELL	1	0.02	0	0	NASD	SLO	-	▉	TNMAKINO5
12:28:46 PM	66443808	SELL	1	0.02	0	0	PSEX	SLO	-	▉	TNMAKINO5
12:31:05 PM	66443782	COMPLETE	25	0.02	0.02	25	PHLX	AON	ADD	▉	MlDmaTn
12:31:05 PM	66443786	COMPLETE	25	0.02	0.02	25	PHLX	AON	ADD	▉	MlDmaTn
12:31:05 PM	66443787	COMPLETE	25	0.02	0.02	25	PHLX	AON	ADD	▉	MlDmaTn
12:31:11 PM	66443806	CANCEL	1	0.02	0	0	C2	SLO	-	▉	TNMAKINO5
12:31:11 PM	66443807	CANCEL	1	0.02	0	0	NASD	SLO	-	▉	TNMAKINO5
12:31:11 PM	66443808	CANCEL	1	0.02	0	0	PSEX	SLO	-	▉	TNMAKINO5

Notes:

[1] All or None orders ("AONs") are orders that must be executed in their entirety or not at all.

[2] Small-lot orders ("SLOs") are non-AONs that are placed for 50 or fewer contracts.

[3] The orders in this example are for call options in CSCO with a strike price of $19.50 (September 22nd, 2012 expiration) and were placed and executed, partially filled, or canceled on September 19th, 2012.

[4] At-Issue Trades must jointly satisfy the following criteria: (1) AONs must be placed on the PHLX in 2011 through 2012; (2) AONs and SLOs for the same security that were placed and subsequently executed or canceled on the same day; (3) at least one SLO is placed on the opposite side of the market as an AON for the same security on the same day; (4) SLOs must be placed before the last executed or canceled AON for the same security on the opposite side of the market that day; (5) SLOs are a price improvement of the best bid or offer; (6) a SLO must be placed within five minutes of an AON execution or cancelation for the same security on the opposite side of the market; and (7) every AON must have a corresponding SLO for the same security on the opposite side of the market that is placed at the same price and after the AON is placed, but before the AON is executed or canceled.

Sources:

[A] Lightspeed Trading Data.

[B] BBO Data.

Exhibit 2
Number of Liquidity Providing AONs Executed by Day
At-Issue Trades
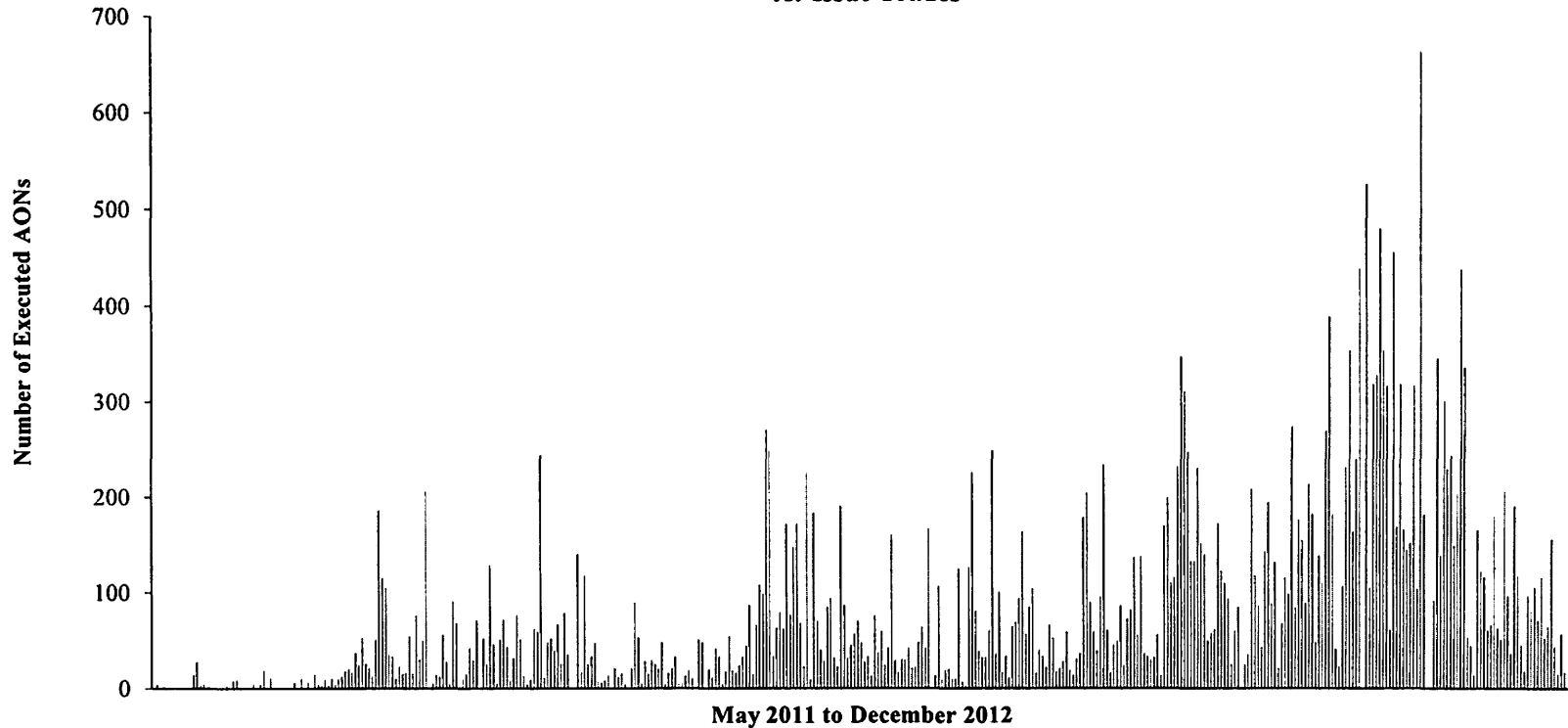
Notes:
[1] All or None orders ("AONs") are orders that must be executed in their entirety or not at all.
[2] Small-lot orders ("SLOs") are non-AONs that are placed for 50 or fewer contracts.
[3] Weekends and market holidays are excluded. At-Issue Trades were placed on 92 percent of trading days between May 2011 and December 2012.
[4] At-Issue Trades must jointly satisfy the following criteria: (1) AONs must be placed on the PHLX in 2011 through 2012; (2) AONs and SLOs for the same security that were placed and subsequently executed or canceled on the same day; (3) at least one SLO is placed on the opposite side of the market as an AON for the same security on the same day; (4) SLOs must be placed before the last executed or canceled AON for the same security on the opposite side of the market that day; (5) SLOs are a price improvement of the best bid or offer; (6) a SLO must be placed within five minutes of an AON execution or cancelation for the same security on the opposite side of the market; and (7) every AON must have a corresponding SLO for the same security on the opposite side of the market that is placed at the same price and after the AON is placed, but before the AON is executed or canceled.

Sources:
[A] Lightspeed Trading Data.
[B] BBO Data.
[C] NASDAQ OMX, Global Data Products Combined Holidays (2013) (http://www.nasdaqtrader.com/content/technicalsupport/dataproducts/GDPcombinedholidays.xls).

Exhibit 3
Number of Liquidity Providing AON Contracts Executed by Month
At-Issue Trades
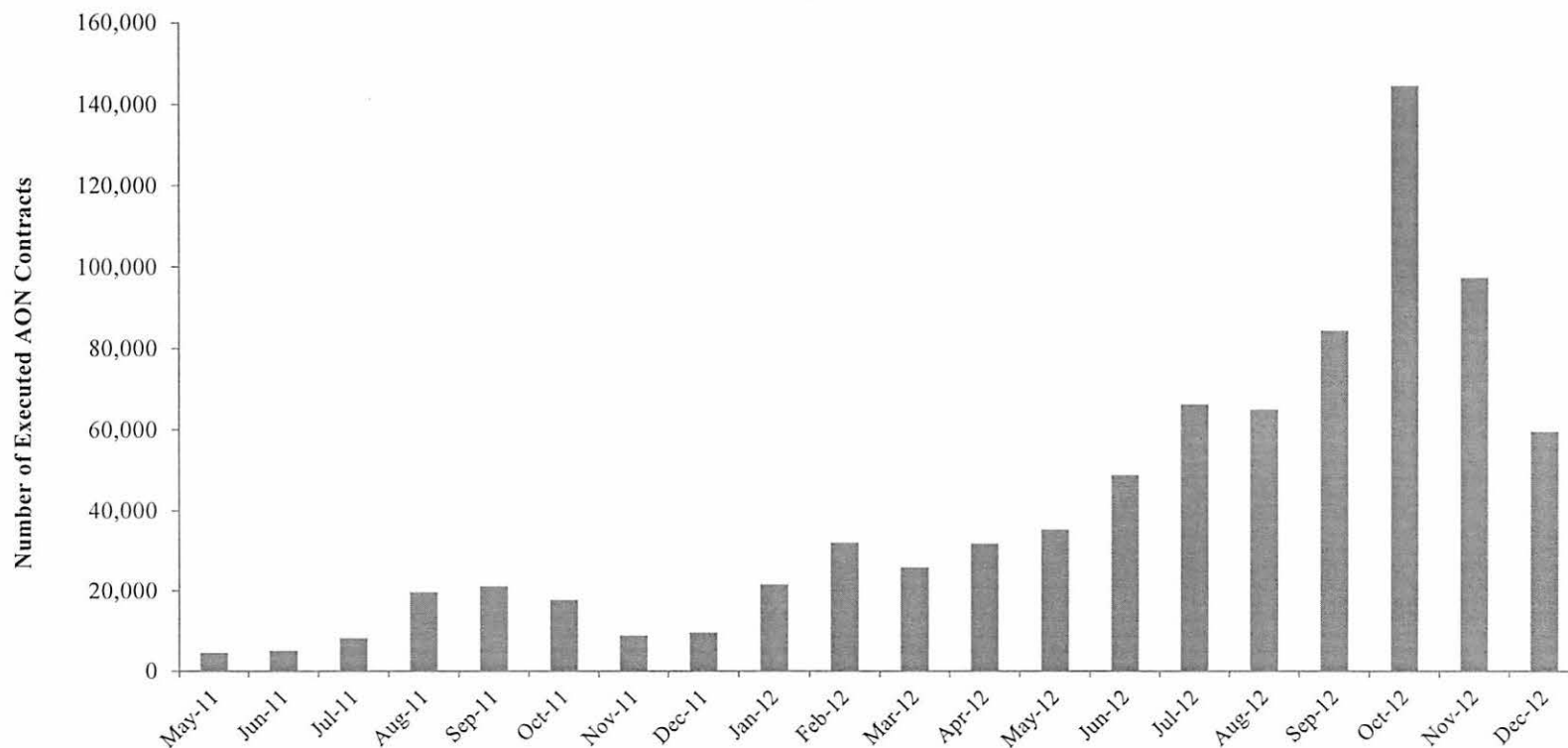
Notes:

[1] All or None orders ("AONs") are orders that must be executed in their entirety or not at all.

[2] Small-lot orders ("SLOs") are non-AONs that are placed for 50 or fewer contracts.

[3] At-Issue Trades must jointly satisfy the following criteria: (1) AONs must be placed on the PHLX in 2011 through 2012; (2) AONs and SLOs for the same security that were placed and subsequently executed or canceled on the same day; (3) at least one SLO is placed on the opposite side of the market as an AON for the same security on the same day; (4) SLOs must be placed before the last executed or canceled AON for the same security on the opposite side of the market that day; (5) SLOs are a price improvement of the best bid or offer; (6) a SLO must be placed within five minutes of an AON execution or cancelation for the same security on the opposite side of the market; and (7) every AON must have a corresponding SLO for the same security on the opposite side of the market that is placed at the same price and after the AON is placed, but before the AON is executed or canceled.

Sources:
[A] Lightspeed Trading Data.
[B] BBO Data.

Exhibit 4
Number of Executed AONs by Month
Lightspeed Trading Data
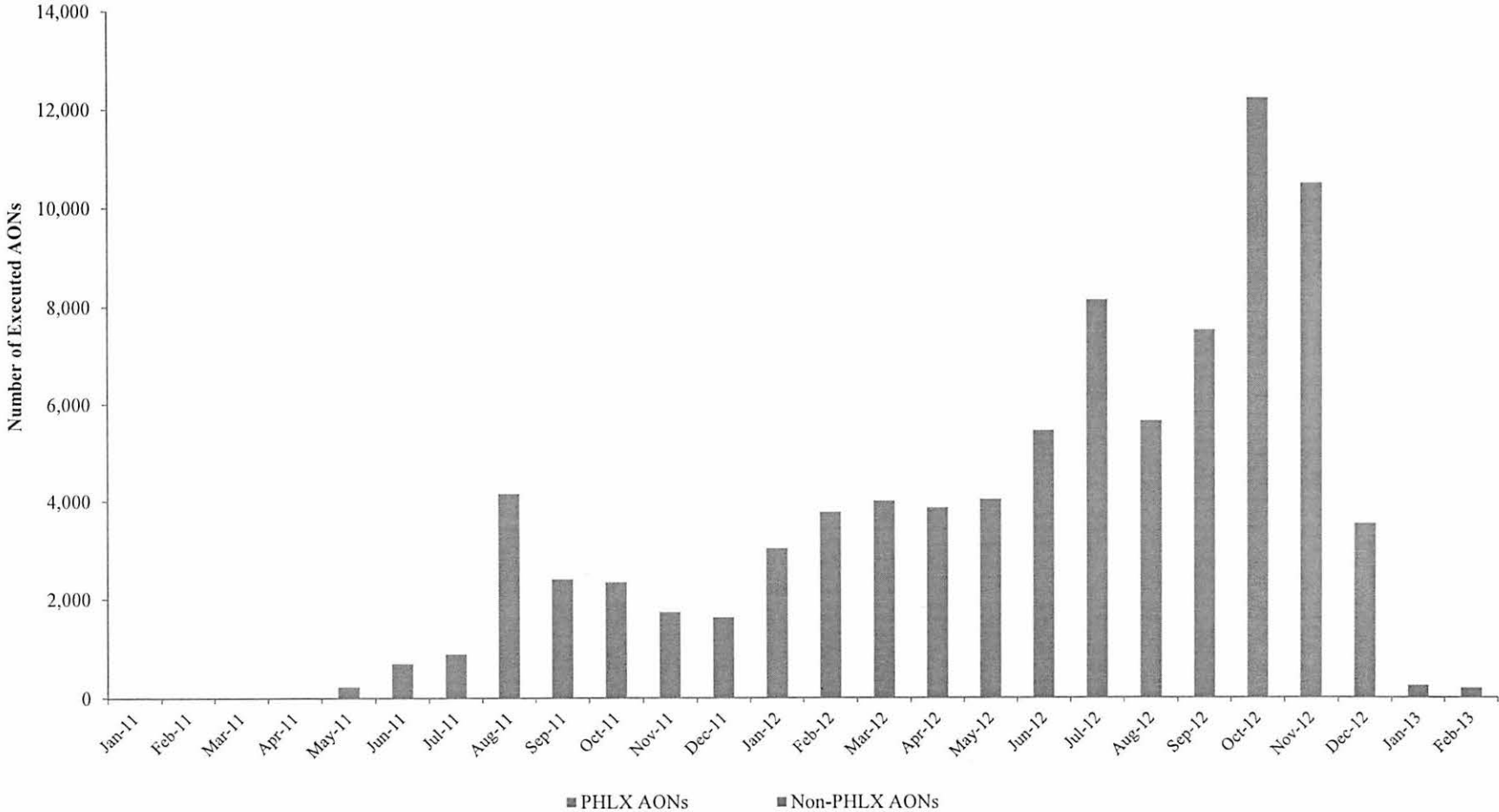
Note:
[1] All or None orders ("AONs") are orders that must be executed in their entirety or not at all.

Source:
[A] Lightspeed Trading Data.

Entity	Account	2011												2011 Total[2]
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Makino	▮	-	-	-	-	-	-	436,160	752,714	553,625	20	-	-	1,742,499
Makino	▮	-	-	-	-	-	-	92,892	116,602	95,285	201	-	-	304,779
Makino		2,928	2,516	3,290	-	-	-	15,449	65,036	61,406	288	-	-	150,625
Makino		5,236	24,579	-	-	-	-	42,388	35,749	18,486	-	-	-	126,438
Makino		-	-	-	-	-	-	41,195	52,323	67,353	-	-	-	160,871
Makino		-	-	-	-	-	-	53,361	-	-	-	-	-	53,361
Makino		-	-	-	-	-	-	4,805	4,603	13,222	-	-	-	22,630
Adelaide		-	-	-	-	336,743	404,313	229	479	-	-	-	-	741,056
Adelaide		-	-	-	-	52,577	93,283	-	-	-	-	-	-	145,860
Adelaide		-	-	-	1,457	54,920	43,012	-	-	-	-	-	-	99,389
Adelaide		-	-	-	-	31,498	36,484	-	616	-	-	-	-	67,982
Adelaide		-	-	-	926	69,189	55,998	600	-	-	-	-	-	126,113
Adelaide		-	-	-	8,577	54,959	33,575	-	-	-	-	-	-	97,111
Fineline		195,878	-	-	639,687	7,157	-	45	30	-	473,238	487,674	172,735	1,133,647
Fineline		23,359	-	-	82,998	-	-	-	-	-	38,880	32,535	818	72,233
Fineline		34	-	-	959	-	-	-	-	-	28,471	15,948	5,280	49,699
Fineline		1,595	-	-	-	-	-	-	-	-	-	-	-	-
Fineline		8,352	-	-	120,916	-	-	-	-	-	21,352	35,382	13,401	70,135
Fineline		727	-	-	10,937	9	-	-	-	-	11,507	14,609	5,831	31,947
Fineline		-	-	-	18,794	-	-	-	-	-	80,295	80,919	32,427	193,641
Fineline		-	-	-	91,698	1,489	-	-	-	-	494	6,109	8,802	15,405
Fineline		75,212	-	-	123,250	-	-	-	-	-	90,953	71,506	23,169	185,628
Fineline		-	-	-	-	-	-	-	-	-	-	-	261,011	261,011
Fineline		-	-	-	-	-	-	-	-	-	-	-	218	218
Fineline		-	-	-	-	-	-	-	-	-	-	-	14,379	14,379
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-
Fineline		-	-	-	-	-	-	-	-	-	-	-	26,594	26,594
Fineline		-	-	-	-	-	-	-	-	-	-	-	36,122	36,122
Fineline		-	-	-	-	-	-	-	-	-	-	-	10,976	10,976
Fineline		-	-	-	-	-	-	-	-	-	-	-	53,716	53,716
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Total[2]		8,164	27,095	3,290	10,960	599,886	666,665	686,250	1,027,027	809,377	745,190	744,682	665,479	5,994,065

Contract Count (AMEX and CBOE) from January 2011 to December 2012

Entity	Account	2012												2012 Total[2]	Total[2]
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	1,742,499
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	304,779
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	150,625
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	126,438
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	160,871
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	53,361
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	22,630
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	741,056
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	145,860
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	99,389
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	67,982
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	126,113
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	97,111
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	1,133,647
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	72,233
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	49,699
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	70,135
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	31,947
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	193,641
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	15,405
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	185,628
Fineline		5,803	555	-	289,198	338,284	220,097	-	-	-	309,220	258,117	169,423	1,584,339	1,845,350
Fineline		-	-	-	1,856	1,401	5,005	16,862	8,419	22	607	705	303	9,877	10,095
Fineline		-	-	-	21,334	21,753	17,343	8	12	13	31,083	13,151	6,482	111,146	125,525
Fineline		-	-	-	-	-	-	-	9,922	12,287	1,220	476	500	2,196	2,196
Fineline		720	-	-	53,632	43,249	39,303	181	-	-	47,240	48,748	42,753	274,925	301,519
Fineline		739	-	-	98,695	62,541	49,165	-	-	-	70,036	48,680	44,869	373,986	410,108
Fineline		702	-	-	-	-	4,369	-	-	-	-	-	6,734	11,103	22,079
Fineline		201	-	-	117,368	82,028	67,438	1	-	-	52,345	51,665	29,144	399,988	453,704
Makino		591,615	807,063	883,700	3,096	500	-	273,863	318,929	382,853	-	-	-	3,258,023	3,258,023
Makino		98,937	116,090	113,650	-	-	-	50,513	74,754	72,664	-	-	-	526,608	526,608
Makino		7,543	374	5,565	-	-	-	-	1,746	3,097	1,809	1	-	18,325	18,325
Makino		38,230	49,397	20,144	-	-	3	18,680	9,095	25,397	95	299	19	160,943	160,943
Makino		83,193	92,366	128,601	280	-	-	26,278	48,510	55,495	80	-	-	434,443	434,443
Makino		33,166	35,276	27,968	-	-	-	16,236	37,997	-	1,421	1,096	2,897	150,643	150,643
Makino		37,382	34,911	56,844	20	-	-	54,285	40,025	35,323	6	-	-	258,770	258,770
	Total[2]	890,066	1,135,477	1,236,472	582,083	549,256	402,720	439,855	531,056	574,829	511,751	421,542	300,208	7,575,315	13,569,380

Notes:

[1] Shaded entries designate months where corresponding accounts were incorrectly designated customer-priority and should have been designated "professional."

[2] The row and column totals only include shaded entries.

Source:

[A] Lightspeed Trading Data.

Entity	Account	2011												2011 Total[2]
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Makino		-	-	-	-	-	-	$ 87,232	$ 150,543	$ 110,725	$ 4	-	-	$ 348,500
Makino		-	-	-	-	-	-	$ 18,578	$ 23,320	$ 19,057	$ 40	-	-	$ 60,956
Makino		586	$ 503	$ 658	-	-	-	$ 3,090	$ 13,007	$ 12,281	$ 58	-	-	$ 30,125
Makino		1,047	$ 4,916	-	-	-	-	$ 8,478	$ 7,150	$ 3,697	-	-	-	$ 25,288
Makino		-	-	-	-	-	-	$ 8,239	$ 10,465	$ 13,471	-	-	-	$ 32,174
Makino		-	-	-	-	-	-	$ 10,672	-	-	-	-	-	$ 10,672
Makino		-	-	-	-	-	-	$ 961	$ 921	$ 2,644	-	-	-	$ 4,526
Adelaid		-	-	-	-	$ 67,349	$ 80,863	$ 46	$ 96	-	-	-	-	$ 148,211
Adelaid		-	-	-	-	$ 10,515	$ 18,657	-	-	-	-	-	-	$ 29,172
Adelaid		-	-	-	$ 291	$ 10,984	$ 8,602	-	-	-	-	-	-	$ 19,878
Adelaid		-	-	-	-	$ 6,300	$ 7,297	-	$ 123	-	-	-	-	$ 13,596
Adelaid		-	-	-	$ 185	$ 13,838	$ 11,200	$ 120	-	-	-	-	-	$ 25,223
Adelaid		-	-	-	$ 1,715	$ 10,992	$ 6,715	-	-	-	-	-	-	$ 19,422
Fineline		39,176	-	-	$ 127,937	$ 1,431	-	$ 9	$ 6	-	$ 94,648	$ 97,535	$ 34,547	$ 226,729
Fineline		4,672	-	-	$ 16,600	-	-	-	-	-	$ 7,776	$ 6,507	$ 164	$ 14,447
Fineline		7	-	-	$ 192	-	-	-	-	-	$ 5,694	$ 3,190	$ 1,056	$ 9,940
Fineline		319	-	-	-	-	-	-	-	-	-	-	-	-
Fineline		1,670	-	-	$ 24,183	-	-	-	-	-	$ 4,270	$ 7,076	$ 2,680	$ 14,027
Fineline		145	-	-	$ 2,187	$ 2	-	-	-	-	$ 2,301	$ 2,922	$ 1,166	$ 6,389
Fineline		-	-	-	$ 3,759	-	-	-	-	-	$ 16,059	$ 16,184	$ 6,485	$ 38,728
Fineline		-	-	-	$ 18,340	$ 298	-	-	-	-	$ 99	$ 1,222	$ 1,760	$ 3,081
Fineline		15,042	-	-	$ 24,650	-	-	-	-	-	$ 18,191	$ 14,301	$ 4,634	$ 37,126
Fineline		-	-	-	-	-	-	-	-	-	-	-	$ 52,202	$ 52,202
Fineline		-	-	-	-	-	-	-	-	-	-	-	$ 44	$ 44
Fineline		-	-	-	-	-	-	-	-	-	-	-	$ 2,876	$ 2,876
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-
Fineline		-	-	-	-	-	-	-	-	-	-	-	$ 5,319	$ 5,319
Fineline		-	-	-	-	-	-	-	-	-	-	-	$ 7,224	$ 7,224
Fineline		-	-	-	-	-	-	-	-	-	-	-	$ 2,195	$ 2,195
Fineline		-	-	-	-	-	-	-	-	-	-	-	$ 10,743	$ 10,743
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-
	Total[2]	$ 1,633	$ 5,419	$ 658	$ 2,192	$ 119,977	$ 133,333	$ 137,250	$ 205,405	$ 161,875	$ 149,038	$ 148,936	$ 133,096	$ 1,198,813

Fees in Dollar Amount if Trades are Designated "Professional" (AMEX and CBOE) from January 2011 to December 2012

Entity	Account	2012												2012 Total[2]	Total[2]
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 348,500
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 60,956
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 30,125
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 25,288
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 32,174
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 10,672
Makino		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 4,526
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 148,211
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 29,172
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 19,878
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 13,596
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 25,223
Adelaide		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 19,422
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 226,729
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 14,447
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 9,940
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 14,027
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 6,389
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 38,728
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 3,081
Fineline		-	-	-	-	-	-	-	-	-	-	-	-	-	$ 37,126
Fineline		$ 1,161	$ 111	-	$ 68,641	$ 80,542	$ 52,382	-	-	-	$ 88,793	$ 74,036	$ 48,702	$ 413,095	$ 465,297
Fineline		-	-	-	$ 439	$ 322	$ 1,223	$ 5,038	$ 2,511	$ 6	$ 170	$ 203	$ 87	$ 2,445	$ 2,489
Fineline		-	-	-	$ 5,088	$ 5,191	$ 4,187	$ 2	$ 3	$ 4	$ 8,972	$ 3,787	$ 1,884	$ 29,110	$ 31,986
Fineline		-	-	-	-	-	-	-	$ 2,977	$ 3,647	$ 364	$ 143	$ 150	$ 657	$ 657
Fineline		$ 144	-	-	$ 12,653	$ 10,197	$ 9,333	$ 54	-	-	$ 13,526	$ 13,955	$ 12,234	$ 71,898	$ 77,217
Fineline		$ 148	-	-	$ 23,488	$ 14,950	$ 11,746	-	-	-	$ 20,084	$ 13,992	$ 12,910	$ 97,172	$ 104,396
Fineline		$ 140	-	-	-	-	$ 1,032	-	-	-	-	-	$ 1,931	$ 2,963	$ 5,158
Fineline		$ 40	-	-	$ 27,953	$ 19,502	$ 16,043	$ 0	-	-	$ 15,012	$ 14,836	$ 8,318	$ 101,664	$ 112,407
Makino		$ 118,323	$ 161,413	$ 190,037	$ 734	$ 115	-	$ 78,905	$ 91,915	$ 110,905	-	-	-	$ 751,496	$ 751,496
Makino		$ 19,787	$ 23,218	$ 24,215	-	-	-	$ 14,510	$ 21,533	$ 20,978	-	-	-	$ 124,242	$ 124,242
Makino		$ 1,509	$ 75	$ 1,193	-	-	-	-	$ 517	$ 924	$ 536	$ 0	-	$ 4,217	$ 4,217
Makino		$ 7,646	$ 9,879	$ 4,262	-	-	$ 1	$ 5,400	$ 2,658	$ 7,301	$ 27	$ 88	$ 5	$ 37,147	$ 37,147
Makino		$ 16,639	$ 18,473	$ 27,711	$ 64	-	-	$ 7,599	$ 14,032	$ 16,127	$ 24	-	-	$ 100,581	$ 100,581
Makino		$ 6,633	$ 7,055	$ 5,891	-	-	-	$ 4,643	$ 10,922	-	$ 426	$ 329	$ 869	$ 35,145	$ 35,145
Makino		$ 7,476	$ 6,982	$ 12,116	$ 5	-	-	$ 15,569	$ 11,554	$ 10,171	$ 2	-	-	$ 63,870	$ 63,870
	Total[2]	$ 178,013	$ 227,095	$ 265,425	$ 138,262	$ 130,704	$ 95,946	$ 126,627	$ 153,131	$ 166,406	$ 146,922	$ 120,952	$ 86,216	$ 1,835,700	$ 3,034,513

Notes:
[1] Shaded entries designate months where corresponding accounts were incorrectly designated customer-priority and should have been designated "professional."
[2] The row and column totals only include shaded entries.

Sources:
[A] SEC File No. SR-NYSEAmex-2010-36; SEC File No. SR-NYSEAmex-2012-16; SEC File No. SR-NYSEAmex-2012-17.
[B] CBOE RG10-131; CBOE RG11-153; CBOE RG11-156; CBOE RG12-049; CBOE RG12-089.
[C] Lightspeed Trading Data.