Exhibit 3c
SR-FINRA-2018-015

TO: File

FROM: Division of Risk, Strategy, and Financial Innovation

DATE: June 1, 2012

RE: FINRA Proposal to Reduce Minimum Quotation Size in OTC Market Tiers (SR-FINRA-2011-058)

This memorandum provides an empirical analysis conducted by the Staff of the Division of Risk, Strategy and Financial Innovation ("Staff") related to the potential effects of a FINRA proposed rule change that would reduce minimum quotation sizes in OTC markets.[1] This memorandum is intended to supplement FINRA's analysis.

On October 14, 2011, FINRA submitted to the Commission a proposed rule change that would amend Rule 6433 to substantially modify the requirements to display customer limit orders. The proposed rule change would establish lower minimum quotation sizes for most OTC customer orders. In support of this proposed rule change, FINRA submitted as part of its initial proposed rule change the results of an internal analysis of customer limit orders which concluded that the amendment would increase the display of customer limit orders from 50% to 90%. FINRA received several comments on its analysis, which are in the comment file.

On April 17, 2012, FINRA filed Amendment 1 to the Proposed Rule Change to Amend FINRA Rule 6433, which, among other things, increased the minimum quotation sizes from what was previously proposed. In support of Amendment 1, FINRA stated that revised tier sizes would facilitate the display of approximately 95% of all customer limit orders.[2]

To assist the Commission in evaluating FINRA's rule change and Amendment 1, the Staff extended the scope of the analysis used by FINRA from October 2011 by evaluating the impact on the Best Bid/Offer. The Staff's findings are summarized as follows:

- The Staff found that the percentage of all customer limit orders displayed under the current rule (92.5%) increases to 97.5% under Amendment 1 as proposed in April 2012. The Staff also found that the greatest increase in transparency would likely occur for stocks between $.10 and $1.
- The Staff estimates that Amendment 1 might reduce the transaction costs for executed limit orders that would be newly visible by an upper bound of $7,173 per day, or 1.75% of dollar volume for these limit order executions.

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[1] *See* Release No. 34-65568 (October 14, 2011) (Notice of Filing of Proposed Rule Change); Release No. 34-66168 (January 17, 2012) (Order Instituting Proceedings to Determine Whether to Disapprove) and Release No. 34-66819 (April 17, 2012) (Notice of Filing of Amendment 1 to Proposed Rule Change).

[2] According to this amendment, FINRA obtained this result after analyzing a random sample of 100 million customer limit orders in OTC equities during a six month period.

This is a memo prepared by the Staff of the Division of Division of Risk, Strategy and Financial Innovation. The Commission has expressed no view regarding the analysis, findings or conclusions herein.

Background

FINRA Rule 6433 currently establishes minimum quotation sizes by security price tiers that Market Makers in OTC equity securities must display in any inter-dealer quotation system that permits updates on a real-time basis.[3] Table 1 compares the current quotation sizes by security price to the proposed quotation sizes (both as initially proposed and under Amendment 1).

Table 1: Comparison of Proposed Rules to Current Rule

	Current Rule	**Proposed Rule October 2011**	**Proposed Rule April 2012**
Price Range	Shares Required	Shares Required	Shares Required
<-$0.02	5,000	10,000	10,000
$0.02-<0.10	5,000	1,000	10,000
$0.10-<0.20	5,000	1,000	5,000
$0.20-<0.26	5,000	1,000	2,500
$0.26-<0.50	5,000	500	2,500
$0.50-<0.51	2,500	500	2,500
$0.51-<1.00	**2,500**	**200**	**1,000**
$1.00-<10.01	500	100	100
$10.01-<100.01	200	100	100
$100.01-<175	100	100	100
$175-<200.01	100	1	1
$200.01-<500.01	25	1	1
$500.01-<1,000.01	10	1	1
$1,000.01-<2,500	5	1	1
$2,500-100,000	1	1	1

FINRA stated in its October filing that the proposed changes "simplify the tier structure, [and] facilitate the display of customer limit orders".[4] FINRA's stated goal for the proposed rule change is to increase transparency in the marketplace: with lower minimum quote sizes, more customer orders would be visible for possible execution.[5]

Replication of FINRA's analysis

FINRA supports its initial proposed rule change with the results of an analysis of customer orders with a limit price between $0.51 and $1.00 (highlighted in bold in Table 1) over a random sample of three to five days in each month of 2011.[6] FINRA finds that the fraction of customer limit orders that would be

[3] By contrast, exchange-listed securities require quotes of at least 1 round lot.

[4] See http://www.finra.org/web/groups/industry/@ip/@reg/@rulfil/documents/rulefilings/p124830.pdf for FINRA Filing of Proposed Rule Change in Federal Register Vol. 76, No. 203.

[5] See supra note 4.

[6] See supra note 4.

displayed would rise from 50% to 90%. FINRA did not consider the marketability of the orders upon submission. Therefore, the limit orders included in the FINRA statistics might be priced away from the inside quote.

The Staff performed a modification of the analysis FINRA discussed in its October filing using the first five trading days in November, 2011.[7] Staff found that for customer orders with limit prices between $0.51 and $1.00, displayable orders would increase from 47.5% to 92.6% under FINRA's filing from October 2011. This finding is consistent with results reported by FINRA for this particular tier size. Using FINRA's amendment from April 2012 with modified thresholds, the percentage of displayable orders for this tier size increases from 47.5% to 73.8% (highlighted in Table 2).

We examined all limit orders to gain a more complete perspective, and find the effect is less dramatic but would still increase transparency. Specifically, when we include all customer orders regardless of limit price entered during the sample period, displayable orders would have increased from 92.5% to 97.5% under the April proposed amendment. The difference between this and the result provided above is that, under the current rule, more than 90% of customer limit orders over $1 are already visible.

Table 2: Classification of Customer Orders Under Current, Proposed and Amended Tier Sizes

	Current Rule			**Tier Sizes for Rule Change - October 2011**			**Tier Sizes as per Amendment 1 - April 2012**		
Price Range	Shares Required	Orders	% Visible	Shares Required	Orders	% Visible	Shares Required	Orders	% Visible
<$0.02	5,000	20,771	93.7%	10,000	18,796	84.8%	10,000	18,796	84.8%
$0.02-<0.10	5,000	13,564	71.0%	1,000	17,634	92.3%	10,000	9,823	51.4%
$0.10-<0.20	5,000	5,384	60.8%	1,000	7,769	87.7%	5,000	5,384	60.8%
$0.20-<0.26	5,000	3,183	59.0%	1,000	4,632	85.8%	2,500	3,772	69.9%
$0.26-<0.50	5,000	5,238	47.4%	500	9,845	89.2%	2,500	6,582	59.6%
$0.50-<0.51	2,500	199	59.5%	500	293	87.5%	2,500	199	59.5%
$0.51-<1.00	**2,500**	**5,426**	**47.5%**	**200**	**10,588**	**92.6%**	**1,000**	**8,433**	**73.8%**
$1.00-<10	500	157,226	89.7%	100	174,009	99.3%	100	174,009	99.3%
$10.01-<100	200	902,795	94.9%	100	947,225	99.5%	100	947,225	99.5%
$100-<175	100	17,519	98.9%	100	17,519	98.9%	100	17,519	98.9%
$175-<200	100	538	98.5%	1	546	100%	1	546	100%
$200-<500	25	1,526	90.7%	1	1,681	100%	1	1,681	100%
$500-<1,000	10	45	66.8%	1	67	100%	1	67	100%
$1,000-<2.5K	5	26	76.7%	1	34	100%	1	34	100%
$2,500-100K	1	55	100%	1	55	100%	1	55	100%
Visible	**1,133,495**		92.5%	**1,210,693**		98.8%	**1,194,125**		97.5%

[7] The data and the reason for their selection are described in the appendix.

Execution of orders that are currently not visible

This section examines those orders at the BBO or better that were hidden, but were nonetheless executed. The Staff's objective was to determine if execution costs would decrease with enhanced visibility of customer limit orders.

Using data from the first five trading days of November 2011 the Staff matched customer limit orders to the best bid/offer and found an average of 38,056 hidden orders per day that are priced at the quote or better but were not displayed under the tier sizes proposed in Amendment 1. Of these orders, approximately 26% are executed. For these executions, the Staff finds:

- 68.9% are executed at the original limit price.
- 26.7% are executed at a price superior to the limit price.
- 4.4% are executed at a price inferior to the original limit price.

We focus on the last category because these orders might have been executed at the original limit price if they had been visible. The Staff estimates the potential loss to customers as the difference between the limit price and the execution prices multiplied by the number of shares executed. We find that customers might have potentially lost as much as $7,173 per day on average, or 1.75% of the dollar volume for these executions because of the level of customer limit order transparency in the market. This is an upper bound for orders that provided price improvement.

The Staff cannot calculate implementation shortfall for unexecuted orders since our dataset does not provide an unambiguous end for the life cycle of each order.

Conclusion

We supplement FINRA's analysis of the rule change and Amendment 1 by examining all customer limit orders, and find that the visibility of these orders would increase from 92.5% to 97.5% if the amendment were approved. When we examine customer limit orders regardless of price that were at the BBO or better, we estimate that customers could potentially save a maximum of $7,173 per day in execution costs if these orders were visible.

Appendix: Data Selection

Our initial data set was FINRA's OATS files for the first two weeks of both August and November, 2011. The Staff chose these two periods in order to include both the high volatility in August and the relative calm in November. The VIX Index measures the expectation of near-term volatility of the S&P 500 index and reached a level of 48 last August. This was a high level when compared to the 200 day moving average for March of 2012, which is 26. The level of expected volatility in August of 2011 was also considerably higher than the maximum level reached by the VIX index in November of 2011, which was 36.16. We found that the distribution of orders sizes in OTC markets was similar in August and November 2011. Therefore, we chose a sample of the first five days in November to minimize the amount of data required in our sample. Our sample period may differ from FINRA since the sample of days was not revealed in any of FINRA's filings or amendments.

FINRA delivered the raw data files containing trading activity of August 1-15 and November 1-15, 2011 on December 23, 2011. In January and February, 2012, SEC Staff discussed the selection of data from OATS with FINRA. FINRA and the SEC agreed that only those orders in the primary file that contained a limit price and with one of the following account codes (OATS designation of ACCNT_TYPE_CD) contained relevant data for the analysis:

- A - Institutional Customer
- C - Combined
- E - Employee Account
- I - Individual Customer
- R - Not a Broker/Dealer
- U - Unknown (only in November Data)
- W - Wholesale (only in August Data)

The data sent by FINRA contained two files, a primary file which contained all new orders and executions entered by a FINRA member and a secondary file with routing, executions, and cancellations information.[8] Combined orders are grouped customer orders. Employee accounts are orders sent in by a person that is an employee of a FINRA member. Unknown and wholesale accounts were included since they are routed orders and therefore likely to be originated by a customer.

[8] Only new customer orders were considered in the Staff's analysis; routed orders were duplicative and therefore removed from the sample.