CBOE
CHICAGO BOARD OPTIONS EXCHANGE

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September 21, 2009

Via Federal Express

Ms. Elizabeth King
Associate Director
Division of Trading and Markets
Securities and Exchange Commission
100 F Street, N.E.
Washington D.C. 20549

Re: Penny Pilot Report for the Period from May 1, 2009 – July 31, 2009

Dear Ms. King:

The Chicago Board Options Exchange, Incorporated ("CBOE") is submitting this letter and the attached report which describes the impact of the Penny Pilot during the period of May 1, 2009 through July 31, 2009, as compared to the three-month period prior to a class participating in the Pilot Program.[1] This is CBOE's seventh report evaluating the Penny Pilot.

CBOE has filed a proposed rule change (SR-CBOE-2009-31) to expand the Penny Pilot. CBOE's proposal would significantly expand the Pilot Program to all equity and ETF option classes (over 2,000 classes), following a relatively brief roll-out period lasting approximately six months. Under CBOE's proposal, which has been endorsed by the Equity Options Trading Committee of SIFMA, option series below $1 premium value would be quoted in penny increments, and series at $1 or above would be quoted in nickel increments. SIFMA has submitted a persuasive comment letter and analysis in support of CBOE's proposed rule change, explaining why the optimal breakpoint in the Penny Pilot classes should be $1.[2]

With respect to the most recent period under review, the impact of quoting in penny increments on average spread, liquidity at the BBO, quote traffic, and trading volume continues to show the same mixed results.

- Average Spread. Average spread width decreased in the penny series by an average of 48% for Phase I classes, 63% for Phase II classes, and 68% for Phase III classes during

[1] Initially, thirteen option classes were included in the Pilot Program ("Phase I classes"). On September 28, 2007, twenty-two additional option classes were added to the Pilot Program ("Phase II classes"). On March 28, 2008, twenty-eight additional classes were added to the Pilot Program ("Phase III classes"). Presently, there are fifty-eight option classes participating in the Penny Pilot.
[2] *See* letter from Thomas F. Price dated June 17, 2009, commenting on SR-NYSEArca-2009-44, SR-CBOE-2009-31, and SR-ISE-2009-32.

the most recent three month review period. These results are somewhat higher than previous reporting periods, and significantly higher than the period of August 2008 through January 2009 when there was a lot of market volatility. The reduction in average spread width in the penny series during that timeframe was much less (*e.g.*, 14% for Phase I classes, 18% for Phase II classes, and 20% for Phase III classes).

- Liquidity at the BBO. From the beginning of the Penny Pilot, there has been a significant reduction in liquidity at the BBO, and that trend continues. During the most recent review period, the average quoted size in the penny series decreased 88% for the Phase I classes, 71% for Phase II classes, and 71% for Phase III classes. The percentage reduction in average size has been consistent throughout the Pilot Program.

- Quote Traffic. Quote traffic, both into CBOE and to OPRA, continues to increase. In this review period, the industry's total number of quotes per day in penny series increased an average of 129% in Phase I classes, 77% in Phase II classes, and 82% in Phase III classes. As CBOE has pointed out in its prior reports on the Penny Pilot, there are real costs to exchanges and others to process and store these quotations.

- Volume. As similarly reported in prior reports, a cursory review of the data would suggest that average daily trading volume increased in the Penny Pilot classes during the most recent review period: 25% in Phase I classes, 78% in Phase II classes, and 15% in Phase III classes. However, much of the increase in Phase I classes again is attributable to a handful of classes: CAT (+131%), QQQQ (+37%), and GE (+273%). For the Phase I classes, 8 of 13 classes actually decreased in total average daily volume and firm average daily volume, 9 of 13 classes decreased in customer average daily volume, and 7 of 13 classes decreased in market maker average daily volume.

  For Phase II classes, 10 of 22 classes decreased in total average daily volume and market maker average daily volume, 13 of 22 Phase II classes decreased in customer average daily volume, and 12 of 22 classes decreased in firm average daily volume. One class in particular skewed these results during this review period -- Citigroup volume increased 1326%. For Phase III classes, 14 of 23 classes decreased in total and firm average daily volume, 11 of 23 classes decreased in customer average daily volume, and 13 of 23 classes decreased in market maker average daily volume. As CBOE has previously reported, reduction in average daily volume may be attributable to many factors, including the Penny Pilot, market conditions overall and/or conditions in a particular security.

If you have any questions concerning CBOE's report, please call me.

Sincerely,

Patrick Sexton

Patrick Sexton

Attachment

CBOE Penny Pilot Report

Time Period

Comparisons for Phase 1 and Phase 2 classes are done between a 3-month pre-period and a 3-month post period that starts on May 1, 2009 and ends on July 31, 2009. For Whole Foods (WFMI), the pre-period is from October through December 2006. For the remaining classes in the initial pilot, the pre-period is from November 2006 through January 2007.[1] For the classes in the second phase, the pre-period is from July 1, 2007 through September 27, 2007. For the classes in the third phase, the pre-period is from January 1, 2008 through March 27, 2008. A note: data from Nasdaq Options Market is excluded from these analyses.

Quote Quality – Average Spreads and Average Size

The section focuses on quotes disseminated to OPRA for each of the pilot classes. The summary covers all quotes sent in all of the series and differentiates between quotes in series that are subject to quoting in penny differentials (penny series) and series that are quoted in nickel differentials (nickel series). Average spread is calculated as a straight average of the spreads (disseminated offer less disseminated bid) of all quotes disseminated to OPRA. Average quoted size is calculated by averaging both bid sizes and ask sizes disseminated to OPRA.

Phase 1 Classes

Spread Width: Overall, the Industry's average spreads in penny series decreased by an average of 48% from $0.10 in the pre-period to $0.05 in the post-period. Average spreads in the post period ranged from $0.04 to $0.11. In nickel series, spreads decreased an average of 22%. Average spreads in the post period ranged from $0.11 to $0.31. The table below shows Industry average spreads in the pre and post periods for each pilot stock for penny series, nickel series and all series.

Average Spread Width

	Penny Series			Nickel Series			All Series		
Class	Pre	Post	% Chg	Pre	Post	% Chg	Pre	Post	% Chg
A	0.13	0.04	-69%	0.25	0.14	-44%	0.19	0.07	-62%
AMD	0.09	0.04	-56%	0.21	0.14	-35%	0.16	0.05	-68%
CAT	0.09	0.04	-61%	0.21	0.12	-40%	0.17	0.08	-50%
FLEX	0.10	0.07	-33%	0.18	0.24	37%	0.14	0.09	-38%
GE	0.08	0.03	-61%	0.18	0.12	-32%	0.13	0.06	-57%
INTC	0.07	0.03	-63%	0.16	0.10	-37%	0.12	0.04	-65%
IWM	0.10	0.05	-47%	0.24	0.20	-13%	0.19	0.14	-27%
MSFT	0.07	0.03	-58%	0.15	0.11	-30%	0.11	0.05	-56%
QQQQ	0.13	0.09	-30%				0.13	0.09	-30%
SMH	0.09	0.03	-65%	0.18	0.12	-34%	0.13	0.05	-61%
SUNW	0.08	0.11	35%	0.15	0.31	104%	0.09	0.16	74%
TXN	0.09	0.03	-63%	0.20	0.11	-43%	0.14	0.05	-63%
WFMI	0.11	0.05	-53%	0.30	0.16	-47%	0.26	0.10	-62%
Total	0.10	0.05	-48%	0.20	0.16	-22%	0.15	0.08	-47%

[1] SUNW changed its symbol to JAVA but it is still shown as SUNW.

Quoted Size: Quoted size has decreased significantly in the post period. The Industry's average sizes are down 88% from 13,685 to 1,656 in penny series and 56% from 4,212 to 1,868 in nickel series. The decrease in sizes was very similar in all classes in penny series. QQQQ, for example decreased from an average size of 60,549 to an average size of 5,765. The table below shows average size in penny series, nickel series and all series for the pilot classes in the pre and post periods.

Average Size

	Penny Series			Nickel Series			All Series		
Class	Pre	Post	% Chg	Pre	Post	% Chg	Pre	Post	% Chg
A	1,153	566	-51%	550	757	38%	1,703	1,322	-22%
AMD	5,306	804	-85%	2,450	767	-69%	7,756	1,572	-80%
CAT	3,008	762	-75%	1,603	1,258	-22%	4,611	2,020	-56%
FLEX	1,670	578	-65%	1,135	646	-43%	2,805	1,224	-56%
GE	11,974	1,715	-86%	5,354	2,377	-56%	17,327	4,091	-76%
INTC	20,547	3,353	-84%	7,781	3,814	-51%	28,329	7,166	-75%
IWM	19,584	2,968	-85%	8,786	4,317	-51%	28,369	7,284	-74%
MSFT	18,093	2,677	-85%	6,759	4,187	-38%	24,852	6,864	-72%
QQQQ	60,549	5,765	-90%				60,549	5,765	-90%
SMH	17,473	1,001	-94%	5,905	1,654	-72%	23,378	2,655	-89%
SUNW	7,762	200	-97%	5,266	295	-94%	13,027	495	-96%
TXN	8,731	750	-91%	3,904	1,754	-55%	12,635	2,504	-80%
WFMI	2,061	394	-81%	1,053	594	-44%	3,114	988	-68%
Total	13,685	1,656	-88%	4,212	1,868	-56%	17,574	3,381	-81%

Phase 2 Classes

Spread Width: Overall, the Industry's average spreads in penny series decreased by an average of 63% from $0.13 in the pre-period to $0.05 in the post-period. Average spreads in the post period ranged from $0.03 to $0.14. In nickel series, spreads decreased an average of 45%. Average spreads in the post period ranged from $0.11 to $0.48. The table below shows Industry average spreads in the pre and post periods for each pilot stock for penny series, nickel series and all series.

Average Spread Width

	Penny Series			Nickel Series			All Series		
Class	Pre	Post	% Chg	Pre	Post	% Chg	Pre	Post	% Chg
AAPL	0.10	0.04	-57%	0.33	0.23	-30%	0.30	0.20	-33%
AMGN	0.12	0.05	-62%	0.29	0.16	-43%	0.23	0.12	-49%
AMZN	0.10	0.05	-52%	0.32	0.21	-36%	0.28	0.18	-37%
BMY	0.11	0.03	-72%	0.25	0.11	-58%	0.19	0.05	-75%
C	0.11	0.05	-58%	0.28	0.30	6%	0.22	0.13	-38%
COP	0.11	0.03	-70%	0.30	0.12	-59%	0.26	0.08	-70%
CSCO	0.10	0.03	-70%	0.23	0.10	-56%	0.17	0.05	-73%
DIA	0.15	0.06	-59%	0.34	0.26	-24%	0.29	0.18	-40%
DNDN	0.17	0.14	-19%	0.40	0.37	-7%	0.28	0.28	0%
FCX	0.20	0.04	-80%	0.58	0.16	-72%	0.53	0.13	-75%
GM	0.11	0.07	-32%	0.27	0.19	-30%	0.21	0.13	-41%
MO	0.12	0.04	-70%	0.29	0.16	-46%	0.24	0.05	-79%
MOT	0.09	0.04	-62%	0.23	0.13	-42%	0.12	0.05	-62%
NYX	0.16	0.04	-76%	0.43	0.13	-70%	0.37	0.07	-80%
OIH	0.13	0.10	-22%	0.40	0.48	21%	0.36	0.41	14%
QCOM	0.10	0.03	-69%	0.24	0.12	-52%	0.18	0.07	-60%
RIMM	0.13	0.05	-63%	0.55	0.19	-66%	0.50	0.16	-68%
SPY	0.14	0.05	-62%	0.34	0.21	-39%	0.30	0.15	-48%
T	0.12	0.03	-75%	0.28	0.12	-58%	0.21	0.05	-76%
XLE	0.14	0.04	-70%	0.27	0.15	-44%	0.23	0.11	-55%
XLF	0.14	0.03	-75%	0.26	0.12	-55%	0.19	0.06	-69%
YHOO	0.10	0.03	-67%	0.25	0.11	-56%	0.18	0.05	-71%
Total	0.13	0.05	-63%	0.34	0.19	-45%	0.28	0.13	-55%

Quoted Size: Quoted size has decreased significantly in the post period. The Industry's average sizes are down 71% from 996 to 286 in penny series and 13% from 497 to 432 in nickel series. The decrease in sizes was very similar in all classes in penny series. CSCO, for example decreased 78% from an average size of 2,199 to an average size of 491 in penny series. The table below shows average size in penny series, nickel series and all series for the pilot classes in the pre and post periods.

Average Size

	Penny Series			Nickel Series			All Series		
Class	Pre	Post	% Chg	Pre	Post	% Chg	Pre	Post	% Chg
AAPL	530	83	-84%	226	136	-40%	262	128	-51%
AMGN	410	78	-81%	181	125	-31%	258	106	-59%
AMZN	490	94	-81%	200	157	-22%	256	144	-44%
BMY	541	152	-72%	280	167	-41%	406	155	-62%
C	1,146	499	-56%	688	756	10%	864	588	-32%
COP	484	163	-66%	214	311	45%	273	235	-14%
CSCO	2,199	491	-78%	1,033	681	-34%	1,569	536	-66%
DIA	2,460	584	-76%	1,715	677	-61%	1,888	639	-66%
DNDN	212	83	-61%	158	181	15%	184	146	-21%
FCX	134	115	-14%	84	199	136%	92	177	93%
GM	519	208	-60%	309	410	33%	386	297	-23%
MO	323	172	-47%	155	101	-35%	205	163	-20%
MOT	1,420	275	-81%	458	241	-47%	1,223	272	-78%
NYX	208	118	-43%	154	208	35%	165	155	-6%
OIH	382	110	-71%	149	109	-27%	181	110	-40%
QCOM	950	167	-82%	432	450	4%	647	307	-53%
RIMM	233	160	-31%	94	208	121%	108	199	83%
SPY	4,713	1,049	-78%	1,938	1601	-17%	2,513	1,407	-44%
T	649	260	-60%	376	398	6%	497	292	-41%
XLE	1,320	337	-75%	758	487	-36%	921	423	-54%
XLF	1,521	898	-41%	916	1690	84%	1,266	1,139	-10%
YHOO	1,069	198	-81%	417	205	-51%	726	200	-72%
Total	996	286	-71%	497	432	-13%	677	355	-48%

Phase 3 Classes

Spread Width: Overall, the Industry's average spreads in penny series decreased by an average of 55% from $0.13 in the pre-period to $0.04 in the post-period. Average spreads in the post period ranged from $0.03 to $0.12. In nickel series, spreads decreased an average of 53%. Average spreads in the post period ranged from $0.11 to $0.58. The table below shows Industry average spreads in the pre and post periods for each pilot stock for penny series, nickel series and all series.

Average Spread Width

	Penny Series			Nickel Series			All Series		
Class	Pre	Post	% Chg	Pre	Post	% Chg	Pre	Post	% Chg
AA	0.12	0.03	-72%	0.26	0.12	-56%	0.20	0.05	-76%
AIG	0.14	0.08	-40%	0.38	0.19	-50%	0.31	0.14	-55%
BAC	0.11	0.04	-66%	0.29	0.16	-45%	0.21	0.08	-62%
BSC	0.23			0.56			0.50		
CFC	0.19			0.48			0.32		
DELL	0.09	0.03	-67%	0.22	0.11	-52%	0.14	0.04	-68%
EBAY	0.11	0.03	-70%	0.25	0.11	-56%	0.18	0.05	-73%
EEM	0.22	0.04	-81%	0.75	0.16	-78%	0.66	0.10	-85%
EMC	0.09	0.03	-67%	0.20	0.11	-45%	0.12	0.05	-63%
F	0.09	0.04	-53%	0.21	0.14	-33%	0.11	0.06	-43%
GS	0.19	0.06	-69%	0.56	0.27	-51%	0.52	0.25	-53%
HAL	0.11	0.03	-71%	0.24	0.11	-54%	0.18	0.06	-69%
HD	0.11	0.03	-72%	0.24	0.11	-54%	0.18	0.05	-70%
JPM	0.12	0.03	-73%	0.27	0.12	-57%	0.22	0.08	-62%
LEH	0.15			0.39			0.34		
MER	0.15			0.34			0.29		
MNX	0.25	0.12	-51%	1.00	0.58	-42%	0.91	0.50	-45%
NEM	0.12	0.04	-70%	0.28	0.13	-52%	0.24	0.10	-59%
PFE	0.09	0.03	-67%	0.22	0.11	-51%	0.14	0.04	-69%
RIO	0.13	0.06	-52%	0.28	0.24	-14%	0.22	0.12	-46%
SBUX	0.10	0.03	-68%	0.22	0.11	-49%	0.15	0.05	-67%
SNDK	0.11	0.04	-67%	0.28	0.13	-51%	0.21	0.07	-68%
TGT	0.13	0.03	-75%	0.28	0.13	-55%	0.24	0.08	-66%
VLO	0.11	0.03	-72%	0.28	0.12	-58%	0.23	0.06	-75%
VZ	0.11	0.03	-72%	0.25	0.12	-53%	0.19	0.05	-71%
WM	0.15			0.33			0.24		
WMT	0.10	0.03	-69%	0.23	0.13	-44%	0.18	0.08	-54%
XOM	0.12	0.04	-65%	0.28	0.17	-39%	0.25	0.12	-50%
Total	0.13	0.04	-68%	0.34	0.16	-53%	0.27	0.10	-64%

Quoted Size: Quoted size has decreased significantly in the post period. The Industry's average sizes are down 71% from 952 to 272 in penny series and 19% from 498 to 402 in nickel series. The decrease in sizes was very similar in all classes in penny series. The table below shows average size in penny series, nickel series and all series for the pilot classes in the pre and post periods.

Average Size

	Penny Series			Nickel Series			All Series		
Class	Pre	Post	% Chg	Pre	Post	% Chg	Pre	Post	% Chg
AA	586	279	-52%	311	297	-5%	424	283	-33%
AIG	592	154	-74%	364	181	-50%	427	169	-61%
BAC	1,255	596	-53%	757	1,281	69%	969	840	-13%
BSC	324			193			215		
CFC	257			251			254		
DELL	2,292	391	-83%	1,029	402	-61%	1,822	393	-78%
EBAY	1,261	285	-77%	643	327	-49%	944	294	-69%
EEM	873	510	-42%	589	899	53%	637	694	9%
EMC	2,225	389	-82%	1,206	514	-57%	1,938	413	-79%
F	1,341	392	-71%	668	597	-11%	1,238	432	-65%
GS	235	39	-84%	127	56	-56%	137	54	-61%
HAL	972	188	-81%	441	252	-43%	693	208	-70%
HD	1,263	262	-79%	497	287	-42%	842	269	-68%
JPM	1,130	213	-81%	614	662	8%	799	482	-40%
LEH	373			253			279		
MER	596			385			441		
MNX	671	486	-28%	492	360	-27%	515	381	-26%
NEM	622	108	-83%	414	265	-36%	474	203	-57%
PFE	1,989	401	-80%	697	318	-54%	1,524	388	-75%
RIO	775	250	-68%	381	464	22%	527	322	-39%
SBUX	1,037	321	-69%	465	338	-27%	817	324	-60%
SNDK	867	86	-90%	420	185	-56%	598	117	-80%
TGT	611	137	-78%	354	295	-17%	422	220	-48%
VLO	742	172	-77%	430	333	-23%	514	223	-57%
VZ	840	161	-81%	440	230	-48%	615	179	-71%
WM	487			327			405		
WMT	1,434	254	-82%	699	379	-46%	1,006	317	-68%
XOM	1,018	191	-81%	486	325	-33%	603	274	-55%
Total	952	272	-71%	498	402	-19%	717	325	-55%

Quote Quantity

This section focuses on the number of quotes disseminated to OPRA and the number of quotes that individual quoters sent to CBOE. As described above, the numbers are compared for the pre and post periods.

Phase 1 Classes

Outbound Quotes to OPRA: The Industry's total number of quotes per day in the penny series increased 129% from an average of 1.3 million to 3.1 million. In the nickel series the Industry's total number of quotes per day increased 36% from an average of 1.2 million to 1.7 million. In penny series, changes ranged from a decrease of 85% in AMD to an increase of 350% in INTC. The table below compares pre- and post-period quote traffic for each of the penny pilot classes in penny series, nickel series and all series.

Quotes per Day

	Penny Series			Nickel Series			All Series		
Class	Pre	Post	% Chg	Pre	Post	% Chg	Pre	Post	% Chg
A	319,150	682,706	114%	291,943	325,037	11%	611,093	1,007,743	65%
AMD	1,111,099	385,656	-65%	1,105,372	42,537	-96%	2,216,471	428,193	-81%
CAT	1,020,435	4,588,732	350%	1,856,912	5,515,476	197%	2,877,347	10,104,208	251%
FLEX	129,693	130,029	0%	119,617	13,483	-89%	249,310	143,512	-42%
GE	616,097	1,371,668	123%	544,236	495,358	-9%	1,160,333	1,867,025	61%
INTC	705,679	1,808,202	156%	598,575	404,282	-32%	1,304,254	2,212,483	70%
IWM	2,648,860	6,985,809	164%	5,849,903	9,748,058	67%	8,498,763	16,733,867	97%
MSFT	1,115,342	2,114,485	90%	922,322	703,404	-24%	2,037,664	2,817,889	38%
QQQQ	7,046,005	16,068,717	128%				7,046,005	16,068,717	128%
SMH	740,611	1,786,874	141%	728,012	560,895	-23%	1,468,623	2,347,770	60%
SUNW	301,383	45,027	-85%	40,160	14,736	-63%	341,544	59,762	-83%
TXN	845,332	1,816,472	115%	785,255	662,801	-16%	1,630,587	2,479,273	52%
WFMI	756,813	1,993,735	163%	1,727,648	1,321,739	-23%	2,484,461	3,315,474	33%
Average	1,335,115	3,059,855	129%	1,214,163	1,650,650	36%	2,455,881	4,583,532	87%

Peak Quotes per Second: Peak quotes are based on sustained rates over a 1-minute period. All of the quotes in a minute are counted and the total is divided by 60 to determine the quotes per second. For this portion of the analysis, the pre period is from December 1, 2007 through the penny pilot start date for each stock. The post period includes all of the peaks since the class started the penny pilot. Peak rates for quotes inbound to CBOE increased substantially, with peaks in SUNW increasing 2346%, SMH increasing 416%, and IWM increasing 360%. Twelve of the 13 classes had increases in peak quote rates outbound to OPRA. SUNW had the biggest increase at 1190%. The table below shows the inbound and outbound peak rates in the pre and post periods for each of the pilot classes.

CBOE Peak Quote Rates

	Inbound			*Outbound*		
Class	Pre	Post	% Chg	Pre	Post	% Chg
A	218	612	181%	154	485	215%
AMD	445	557	25%	323	527	63%
CAT	728	1,999	175%	499	1,362	173%
FLEX	211	211	0%	169	153	-9%
GE	344	1,331	287%	238	960	303%
INTC	341	924	171%	271	1,257	364%
IWM	857	3,943	360%	700	2,778	297%
MSFT	545	1,072	97%	434	1,208	178%
QQQQ	825	3,536	329%	743	2,393	222%
SMH	171	882	416%	151	925	513%
SUNW	57	1,394	2346%	48	619	1190%
TXN	285	896	214%	225	457	103%
WFMI	600	1,222	104%	468	760	62%

Phase 2 Classes

Outbound Quotes to OPRA: The Industry's total number of quotes per day in the penny series increased 187% from an average of 1.7 million to 3.1 million. In the nickel series the Industry's total number of quotes per day decreased 17% from an average of 6.5 million to 5.4 million. In penny series, changes ranged from a 84% decrease in GM to an increase of 510% in DNDN. The table below compares pre- and post-period quote traffic for each of the penny pilot classes in penny series, nickel series and all series.

Quotes per Day

	Penny Series			Nickel Series			All Series		
Class	Pre	Post	% Chg	Pre	Post	% Chg	Pre	Post	% Chg
AAPL	3,046,909	2,411,824	-21%	22,808,987	13,741,663	-40%	25,855,895	16,153,487	-38%
AMGN	682,920	1,354,498	98%	1,341,235	2,028,752	51%	2,024,154	3,383,250	67%
AMZN	1,364,044	1,898,867	39%	5,713,813	7,715,753	35%	7,077,857	9,614,620	36%
BMY	533,512	1,129,875	112%	569,448	281,991	-50%	1,102,959	1,411,866	28%
C	1,099,964	402,917	-63%	1,756,308	213,603	-88%	2,856,272	616,520	-78%
COP	1,268,397	4,320,005	241%	4,572,051	4,053,946	-11%	5,840,448	8,373,951	43%
CSCO	552,746	2,040,916	269%	649,046	624,260	-4%	1,201,793	2,665,177	122%
DIA	6,642,862	9,154,035	38%	21,868,260	13,387,601	-39%	28,511,122	22,541,637	-21%
DNDN	154,750	943,228	510%	162,318	1,670,665	929%	317,069	2,613,892	724%
FCX	1,397,283	4,399,439	215%	7,926,679	12,413,044	57%	9,323,962	16,812,482	80%
GM	970,295	155,362	-84%	1,658,542	122,267	-93%	2,628,837	277,629	-89%
MO	885,475	621,971	-30%	2,097,219	85,149	-96%	2,982,693	707,119	-76%
MOT	602,007	469,171	-22%	155,345	55,624	-64%	757,352	524,795	-31%
NYX	943,804	3,472,362	268%	3,742,270	2,387,409	-36%	4,686,074	5,859,771	25%
OIH	1,443,427	2,129,713	48%	9,077,926	9,867,595	9%	10,521,353	11,997,308	14%
QCOM	889,667	3,665,746	312%	1,250,832	3,584,537	187%	2,140,498	7,250,283	239%
RIMM	2,082,325	2,057,182	-1%	18,329,980	8,860,106	-52%	20,412,306	10,917,288	-47%
SPY	9,290,510	13,564,841	46%	35,577,287	25,001,533	-30%	44,867,797	38,566,374	-14%
T	746,992	1,721,266	130%	945,272	523,401	-45%	1,692,264	2,244,667	33%
XLE	3,721,355	7,862,276	111%	9,095,070	10,649,976	17%	12,816,424	18,512,252	44%
XLF	977,365	2,002,360	105%	714,874	872,579	22%	1,692,239	2,874,940	70%
YHOO	475,367	1,673,398	252%	527,007	533,902	1%	1,002,373	2,207,301	120%
Total	1,729,027	3,065,966	77%	6,503,321	5,394,334	-17%	8,232,348	8,460,300	3%

Peak Quotes per Second: Peak quotes are based on sustained rates over a 1-minute period. All of the quotes in a minute are counted and the total is divided by 60 to determine the quotes per second. The post period includes all of the peaks since the class started the penny pilot. Peak rates for quotes inbound to CBOE increased substantially, with peaks in DNDN increasing 681%, YHOO increasing 299% and XLE increasing 223%. Twenty one of the 22 classes had increases in peak quote rates outbound to OPRA. AMGN had the biggest increase at 290%. The table below shows the inbound and outbound peak rates in the pre and post periods for each of the pilot classes.

CBOE Peak Quote Rates

	Inbound			*Outbound*		
Class	Pre	Post	% Chg	Pre	Post	% Chg
AAPL	2,741	4,294	57%	1,936	3,209	66%
AMGN	517	1,545	199%	375	1,462	290%
AMZN	1,501	3,292	119%	1,029	1,975	92%
BMY	344	890	159%	276	588	113%
C	519	1,346	159%	359	1,137	217%
COP	1,460	1,501	3%	1,160	1,274	10%
CSCO	544	1,325	144%	444	1,060	139%
DIA	2,412	4,102	70%	1,921	3,238	69%
DNDN	642	5,015	681%	578	2,018	249%
FCX	1,943	3,029	56%	1,716	1,828	7%
GM	1,155	1,379	19%	973	1,212	25%
MO	934	722	-23%	737	531	-28%
MOT	206	547	166%	161	266	66%
NYX	1,640	2,245	37%	1,135	1,339	18%
OIH	1,437	2,770	93%	1,142	2,183	91%
QCOM	560	1,102	97%	457	1,585	247%
RIMM	3,172	6,520	106%	2,526	4,240	68%
SPY	3,255	6,160	89%	2,931	4,564	56%
T	473	1,032	118%	418	627	50%
XLE	1,193	3,855	223%	1,005	3,054	204%
XLF	478	1,535	221%	377	1,276	238%
YHOO	348	1,387	299%	271	1,025	278%

Phase 3 Classes

Outbound Quotes to OPRA: The Industry's total number of quotes per day in the penny series increased 82% from an average of 1.3 million to 2.3 million. In the nickel series the Industry's total number of quotes per day decreased 29% from an average of 3.6 million to 2.6 million. In penny series, changes ranged from a decrease of 24% in AIG to an increase of 236% in TGT. The table below compares pre- and post-period quote traffic for each of the penny pilot classes in penny series, nickel series and all series.

Quotes per Day

	Penny Series			Nickel Series			All Series		
Class	Pre	Post	% Chg	Pre	Post	% Chg	Pre	Post	% Chg
AA	980,914	1,600,527	63%	1,396,385	393,592	-72%	2,377,299	1,994,119	-16%
AIG	955,208	727,652	-24%	2,488,116	897,595	-64%	3,443,324	1,625,247	-53%
BAC	1,982,659	3,833,319	93%	2,669,153	2,118,404	-21%	4,651,812	5,951,724	28%
BSC	2,088,171			10,093,395			12,181,566		
CFC	418,077			337,306			755,382		
DELL	850,846	1,563,654	84%	504,367	342,078	-32%	1,355,212	1,905,732	41%
EBAY	905,420	2,268,584	151%	954,698	646,276	-32%	1,860,118	2,914,860	57%
EEM	1,143,404	2,669,080	133%	5,632,365	2,388,164	-58%	6,775,768	5,057,244	-25%
EMC	1,011,439	1,058,964	5%	396,996	242,758	-39%	1,408,435	1,301,722	-8%
F	279,528	803,039	187%	50,393	194,186	285%	329,920	997,225	202%
GS	2,605,878	2,105,014	-19%	25,533,954	14,039,057	-45%	28,139,833	16,144,071	-43%
HAL	1,047,394	3,142,930	200%	1,157,106	1,392,898	20%	2,204,500	4,535,827	106%
HD	919,194	2,868,019	212%	1,122,373	1,192,787	6%	2,041,567	4,060,806	99%
JPM	2,013,109	5,285,379	163%	3,587,246	7,871,227	119%	5,600,355	13,156,606	135%
LEH	1,455,596			5,121,145			6,576,741		
MER	2,413,819			6,682,465			9,096,283		
MNX	1,268,040	1,745,521	38%	8,850,633	8,541,080	-3%	10,118,673	10,286,601	2%
NEM	1,463,981	4,170,606	185%	3,583,259	6,406,699	79%	5,047,240	10,577,305	110%
PFE	394,101	1,319,375	235%	221,716	255,087	15%	615,817	1,574,461	156%
RIO	1,468,234	1,754,255	19%	2,498,918	879,644	-65%	3,967,152	2,633,899	-34%
SBUX	701,468	1,731,111	147%	437,698	416,693	-5%	1,139,165	2,147,804	89%
SNDK	932,658	1,708,666	83%	1,413,160	785,505	-44%	2,345,818	2,494,171	6%
TGT	1,203,351	4,041,640	236%	3,362,283	4,500,912	34%	4,565,633	8,542,552	87%
VLO	1,687,816	3,067,575	82%	4,564,834	1,429,499	-69%	6,252,650	4,497,074	-28%
VZ	912,800	1,704,258	87%	1,177,023	622,352	-47%	2,089,823	2,326,609	11%
WM	1,395,361			1,488,563			2,883,925		
WMT	1,374,169	1,971,413	43%	1,918,598	2,011,591	5%	3,292,767	3,983,004	21%
XOM	1,322,868	1,371,498	4%	4,695,045	2,268,233	-52%	6,017,913	3,639,731	-40%
Total	1,256,982	2,283,134	82%	3,640,685	2,601,579	-29%	4,897,668	4,884,713	0%

Peak Quotes per Second: Peak quotes are based on sustained rates over a 1-minute period. All of the quotes in a minute are counted and the total is divided by 60 to determine the quotes per second. The post period includes all of the peaks since the class started the penny pilot. Peak rates for quotes inbound to CBOE increased, with peaks in HAL increasing 280%, F increasing 256% and and BAC increasing 222%. All of the classes had increases in peak quote rates outbound to OPRA. AIG had the biggest increase at 469%. The table below shows the inbound and outbound peak rates in the pre and post periods for each of the pilot classes.

CBOE Peak Quote Rates

	Inbound			Outbound		
Class	Pre	Post	% Chg	Pre	Post	% Chg
AA	635	861	36%	464	550	19%
AIG	783	6,703	756%	454	2,586	469%
BAC	916	2,948	222%	646	1,650	156%
BSC	2,763			1,371		
CFC	538			282		
DELL	606	1,206	99%	447	904	102%
EBAY	457	1,018	123%	337	632	87%
EEM	1,404	2,610	86%	912	1,466	61%
EMC	382	597	56%	193	442	129%
F	148	527	256%	109	367	236%
GS	3,201	3,545	11%	1,624	2,072	28%
HAL	402	1,526	280%	290	1,169	303%
HD	488	839	72%	242	791	227%
JPM	920	2,935	219%	546	2,152	294%
LEH	1,781	2,463	38%	827	1,625	96%
MER	2,035	2,573	26%	1,016	1,396	37%
MNX	1,868	2,361	26%	1,531	1,998	31%
NEM	874	1,739	99%	439	1,360	210%
PFE	251	597	138%	165	507	208%
RIO	966	2,090	116%	488	1,440	195%
SBUX	358	639	78%	239	486	104%
SNDK	504	1,453	188%	314	1,071	241%
TGT	907	1,638	81%	380	1,758	363%
VLO	858	1,526	78%	554	1,092	97%
VZ	444	694	56%	238	573	140%
WM	883	925	5%	552	552	0%
WMT	833	1,231	48%	453	920	103%
XOM	617	1,504	144%	416	1,195	188%