INTERNATIONAL SECURITIES EXCHANGE

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International Securities Exchange

Penny Pilot Analysis 5

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Chapter 1. Summary

1.1. Background

On January 26th, 2007, the U.S. options exchanges commenced a pilot to quote and trade options in pennies. The pilot consisted of options on 13 stocks and ETFs. Symbols in the pilot use trading increments of one-cent for options trading at less than $3.00, and increments of five-cents for options trading at $3.00 or more except for options on QQQQ, which trades in one-cent increments at all price levels.

Phase two commenced on September 29, 2007 expanding the pilot by an additional 22 symbols, and Phase three commenced on March 28, 2008, expanding by an additional 28 symbols.

The International Securities Exchange, LLC ("ISE" or the "Exchange") produced a report of its findings at each stage of the pilot and they can be found on the ISE's web site.

Phase 1 to April 2007: http://www.ise.com/assets/files/investors/Penny_Report.pdf

Phase 1 to September 2007: http://www.ise.com/assets/files/investors/Penny_Report_2.pdf

Phase 2 to January 2008 http://www.ise.com/assets/files/investors/Penny_Report_3.pdf

Phase 3 to September 2008 http://www.ise.com/assets/files/investors/Penny_Report_4.pdf

Phase 1, 2, 3 to April 2009 http://www.ise.com/assets/files/investors/Penny_Report_5.pdf

1.2. Summary and Recommendation

The Penny Pilot has continued without any operational issues. The quoted spread tightened in the year following introduction of penny trading, but widened for phase 1 and 2 symbols in the past six months. The size available at the BBO has decreased significantly since the start of the Penny Pilot, while trading volumes increased. The significant volatility in the market in the last six months makes it impossible to discern whether wider spreads and the volume increase was due to pennies or other factors.

Both penny quoting and market volatility have contributed to the vast increase in number of quotes that market makers send to ISE.

The pilot has excluded certain high priced options with many option strikes due to their high quotation rates. If these options were migrated to pennies, we estimate that the number of quotes sent to OPRA for these symbols would double.

ISE continues to recommend that all options quote in 1-cent increments for premiums up to $1; 5-cent increments from $1 to $3; and 10-cent increments above $3. By retaining these tiers for all options, we believe that the number of quotes generated by high priced symbols will be manageable and will maintain adequate liquidity in higher priced option series.

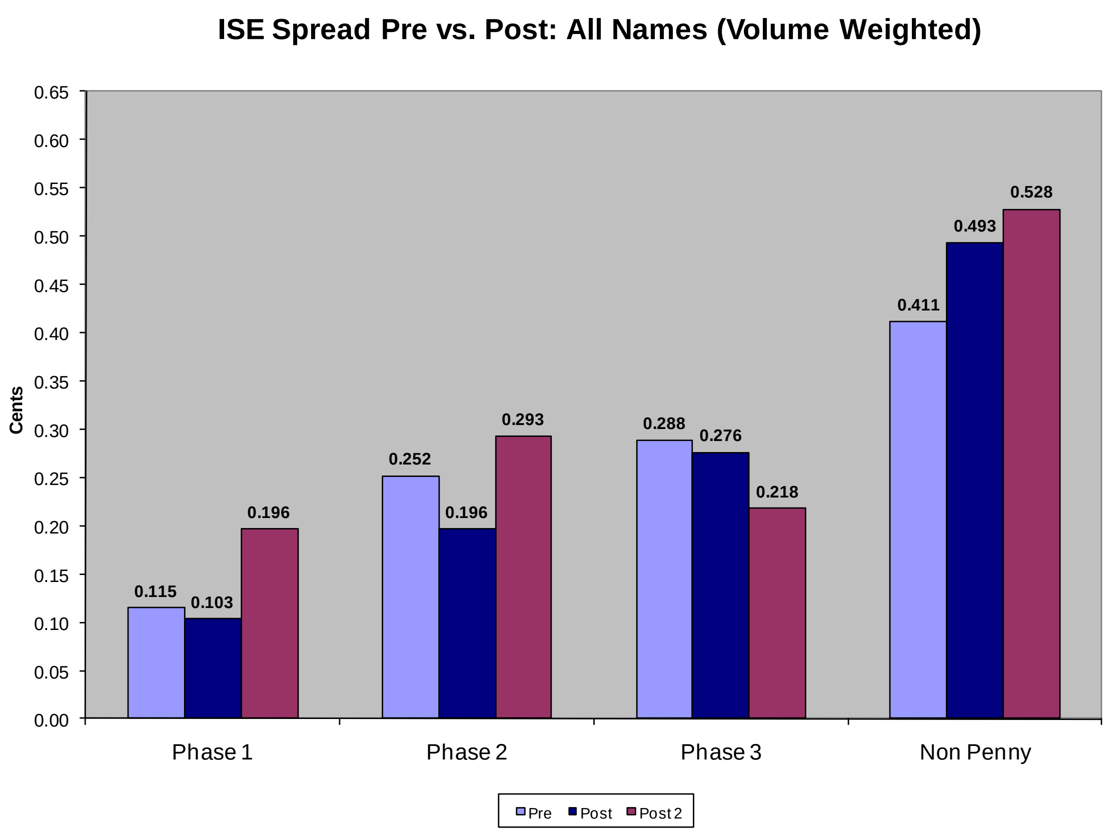
Chapter 2. Quality of Markets

2.1. ISE Best Bid Offer Spread

ISE sends its BBO for each option series to the Options Price Reporting Authority ("OPRA"), which disseminates it to the market.

The following graph shows the change in ISE Volume Weighted Spread[1] for the symbols in each phase of the pilot. The light blue bar shows the three months prior to the group of symbols in each phase moving to pennies. The dark blue bar is the year post pennies[2], and the red bar is the most recent six month time period from November 2008 to April 2009. These distinctions in time show both the overall and the most recent impact of pennies.

The graph shows that the spreads tightened from the pre-penny period to the year following the introduction of Pennies. During the volatile period in the past six months, the Phase 1 and 2, and non-penny spreads widen, surpassing pre-penny periods. In contrast, spreads tighten in the Phase 3 symbols.



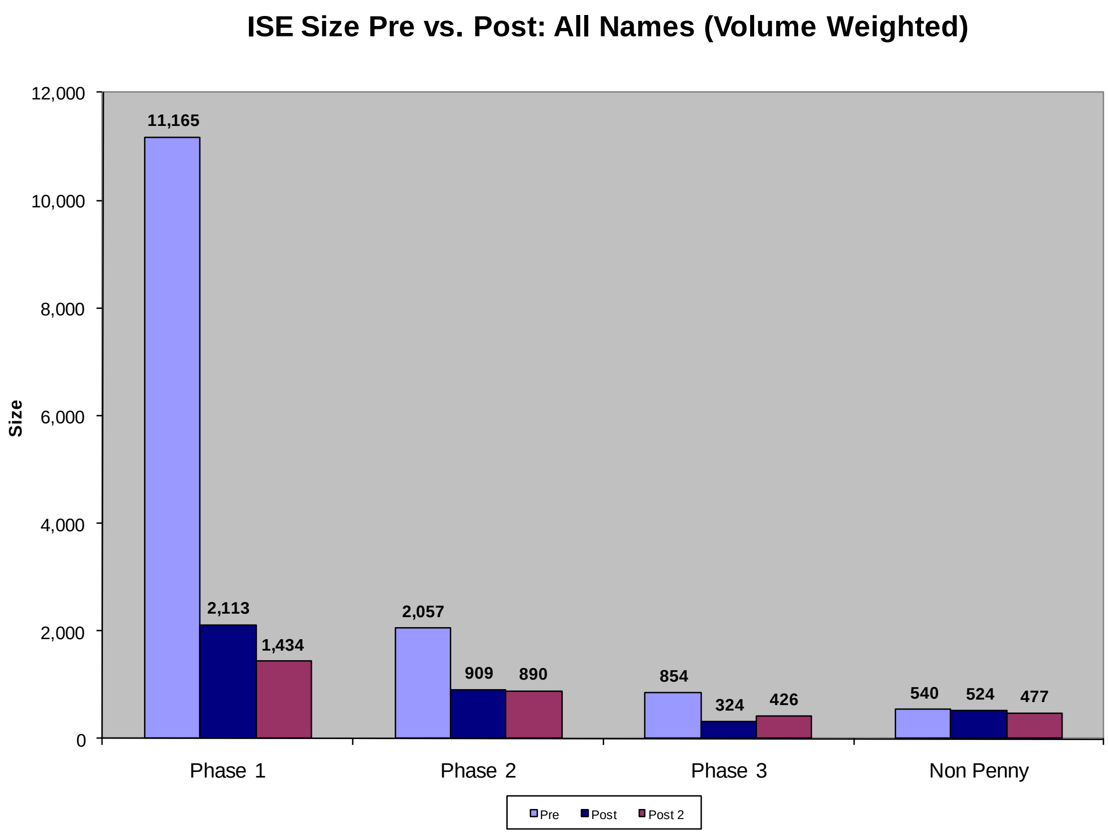
[1] The Volume Weighted Spread takes the volume of each option pre- and post-pilot into account, giving proportional weight to each spread based on the option's volume. Please see Appendix A for an example of the calculation.
[2] Further explanation of the graphs can be found in Appendix B.

2.2. ISE Size at the BBO

Size is the volume of contracts available at the BBO for each option series as published to OPRA.

The following graph shows the change in ISE Volume Weighted Size for each phase of the pilot.

Size at the BBO reduced dramatically for the liquid phase 1 symbols and is continuing to decline. The less liquid phase 2 and phase 3 symbols also declined in size following the introduction of pennies, but appeared to have stabilized the last six months. Non-Penny symbols size inched downward over the sample three periods.



Chapter 3. Capacity

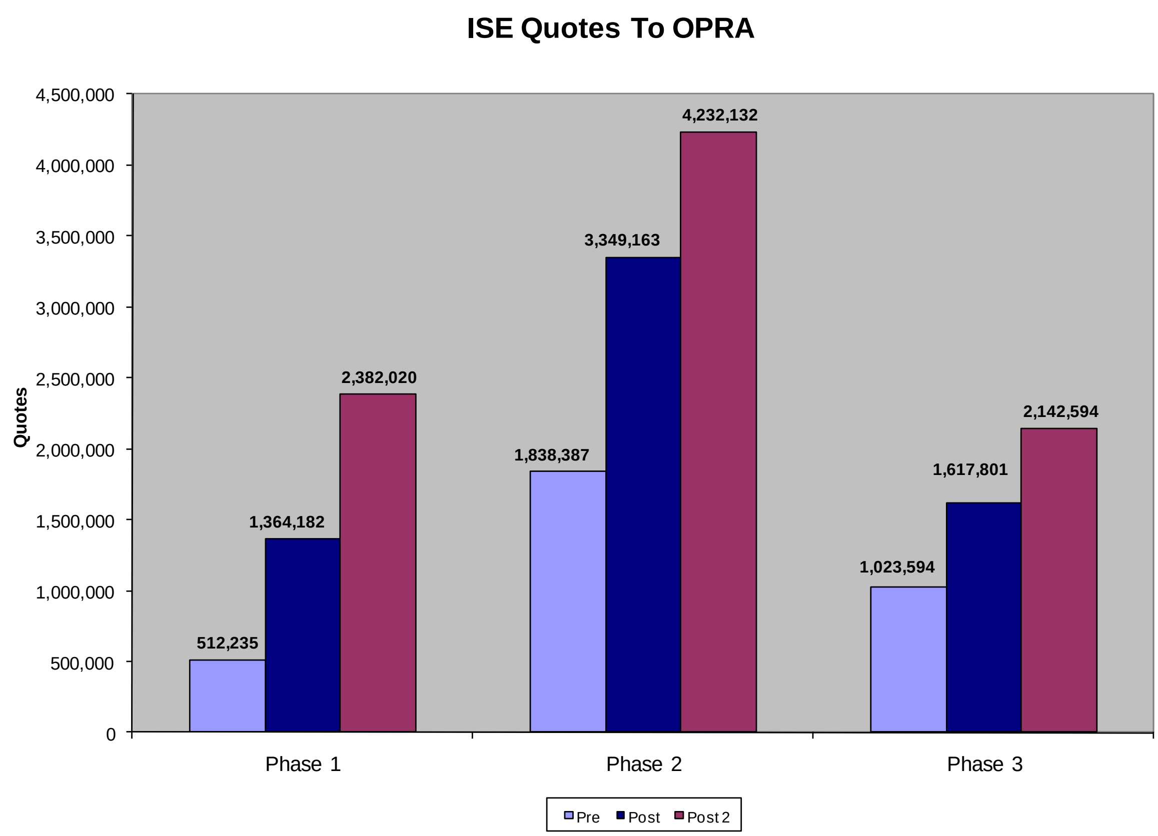
3.1. ISE Quotes To OPRA

The Exchange receives quotes from market makers and orders from all market participants. ISE submits a new quote to OPRA if a market maker quote or an order changes our price or size at the top of the book.

As the number of quotes disseminated to OPRA increases, all industry participants must increase their systems' capacity to process the additional quotes.

The following graph shows the change in ISE quote volumes to OPRA for the three phases over time.

The number of quotes sent to OPRA for all symbols grew substantially the first year post pennies for symbols in all three phases. With the volatile market the past six months, the number of quotes sent to OPRA continued to increase.

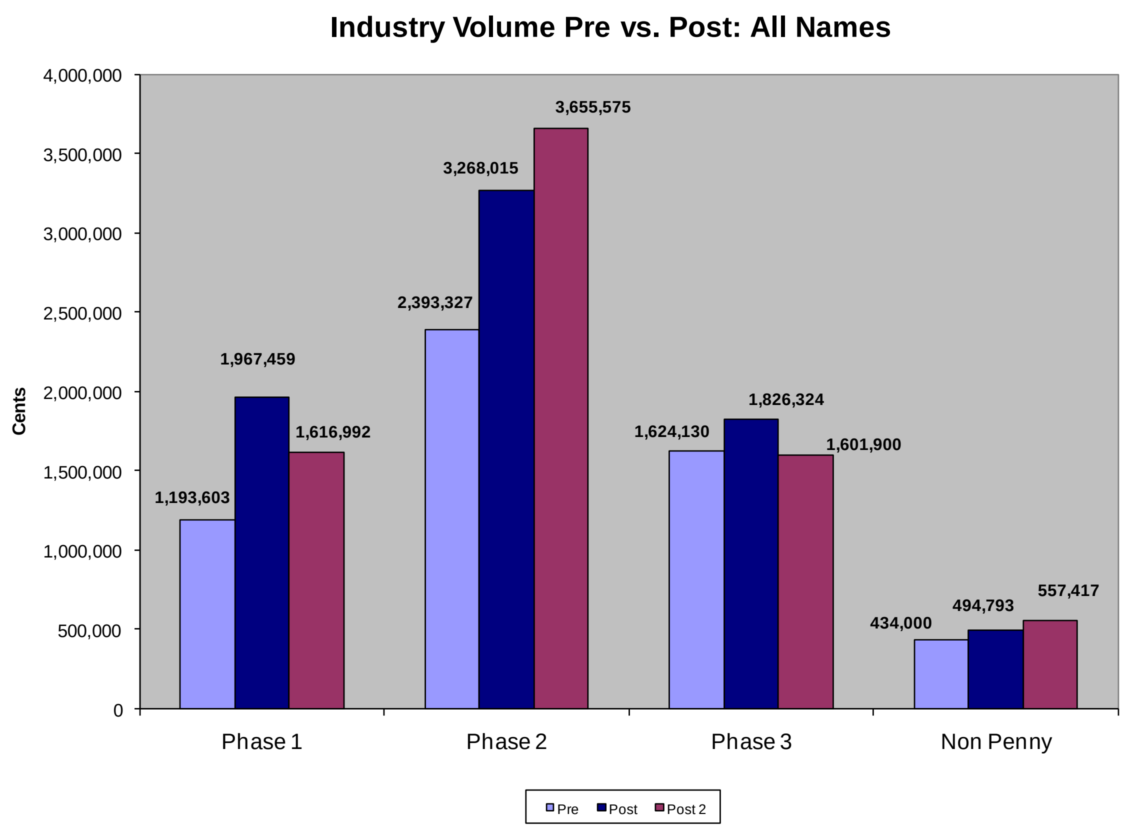


Chapter 4. Trading Activity

4.1. Industry Average Daily Volume (ADV)

The following table shows the change in industry Average Daily Volume (ADV) for symbols in each phase over time.

Volume increased for the three phases of penny symbols in the year following the introduction of pennies.



Appendix A: Volume Weighted Spread

Calculation

The Volume Weighted Spread and Size are calculated by adding proportional weight to each underlying based on volume executed in that underlying when averaging factors.

The Volume Weighted Spread uses the following formula:

$$\frac{\sum_{n}^{i} Spread_i * Volume_i}{TotalVolume}$$

If the spreads and adjacent volumes were as follows:

Spread	.26	.38	.26	.23
Volume	98	3,222	3	56

Then, the Volume Weighted Spread would be calculated as below:

$$\frac{(.26*98)+(.38*3{,}222)+(.26*3)+(.23*56)}{3{,}379}$$

$$\frac{(25.48)+(1{,}224.36)+(.78)+(12.88)}{3{,}379}$$

$$.3739$$

The Volume Weighted Size is calculated in a similar fashion.

Appendix B: Explanation of Graphs

Time Periods in Graphs

All graphs in this document show the progress of the symbols in each phase as they have changed over time. Results for the three groups of symbols have been kept distinct as phase 1 included some very liquid, high volume symbols while phase 3 were generally less liquid symbols.

Phase 1 converted 13 symbols, starting on 01/26/07, completed by 02/09/07.

Phase 2 converted 22 symbols on 09/28/07

Phase 3 converted 28 symbols on 03/28/08. Since the conversion to pennies, five symbols were delisted in 2008, including BSC (5/30), CFC (6/30), LEH (9/17), WM (9/25) and MER (12/31).

The light blue bar shows the three months prior to pennies.

The dark blue bar shows the year post pennies, as follows:

- Phase 1 symbols, the dark blue bar covers 12 months from 02/09/07 to 02/12/08
- Phase 2 symbols, the dark blue bar covers 12 months from 09/28/07 to 09/26/08
- Phase 3 symbols, the dark blue bar covers 12 months from 03/28/08 to 03/27/09

The red bar shows the most recent six months, from 11/03/08 to 04/30/09.

Appendix C: Explanation of Graphs

Explanation of Comparable Symbols

To assist in showing the impact of penny pilot, a group of comparable symbols was selected to show change in the non-penny stocks.

For each of the penny Pilot symbols, a comparable symbol was found in the non-penny symbols and used as a reference point.

The following list of 24 symbols was used as a baseline:

ALU, AMX, BHP, CELEG, CVX. FXI, HPQ, IWN, IWO, IYR, JNPR, JPM, MDY, MRK, NILE, NMX, NOK, NRMX, PALM, RAI, RTH, TTM, USO, XLB.

The average Spread, Size at the BBO and ADV were collected for these symbols for the same periods as used for the phase 3 group. Phase 3 converted 28 symbols on 03/28/08.

- The light blue bar covers from 12/28/07 to 3/27/08.
- The dark blue bar shows from 03/28/08 to 03/27/09
- The red bar shows the most recent six months, from 11/02/08 to 04/30/09.