

## The Hidden Cost of “Sub-Pennying”

Why are broker/dealers allowed to force other investors to pay the spread?

BY DENNIS DICK, CFA

Consider the following scenario: The ask price in security XYZ is publicly posted on the exchange at US\$25. A trader places a limit order to buy 100 shares of this stock at the US\$25 ask price. The execution price comes back at US\$24.9999, a price improvement. The person offering the stock at US\$25 remains unfilled.

What happened? Why did the person offering the stock at the best available price not get the fill? Because a broker/dealer or high-frequency algorithmic trader stepped in front of the US\$25 seller and took the fill.

This practice is known as “sub-pennying.” Allow me to explain. When decimalization took place in 2001, it was a common practice for traders and market makers to step in front of displayed orders by a penny. They did so in order to get to the front of the line and be first for execution. The term “pennying” was coined for the practice. In the example above, someone stepped in front of the order not by a penny but by 1/100th of a penny, hence the term “sub-pennying.”

Sticking with the initial scenario, the trader offering the stock at US\$25 was part of the National Best Bid and Offer (NBBO). The NBBO for a stock consists of the highest posted bid and the lowest posted offer. It is the best publicly available market for the stock. In the example, the trader tried to buy the best posted ask price but received a price improvement of US\$0.0001.

How did this happen? A broker/dealer is allowed to provide price improvement to its customers. In this example, the broker/dealer sold the stock at US\$24.9999, providing the customer with a savings of one cent on the US\$2,500 buy order. But the person offering US\$25, the true liquidity provider, has not been filled. That investor is left holding the stock. Tough luck! Even though the buyer is left unscathed and actually received a better price, the outcome is not fair to the seller whose order was left unfilled.

### Dark Pools and In-House Trading

Take a closer look at the buy-side mechanics. When a trader places a US\$25 buy order, the order is routed through the trader’s brokerage house. The brokerage house decides whether to fill the order “in-house” or send it to the public marketplace. An in-house fill occurs when the broker either matches the order internally with another trader’s order or fills the order from its own inventory of stock. In the case of an in-house fill, the

order never reaches the public trading floor. If the broker chooses not to fill the order in-house, then it will be routed to the public exchange.

Many brokerage houses use smart routers that check “dark pools” for a better price. A dark pool is an execution venue that provides liquidity but does not provide public quotes. In other words, it is a place where a trader can place hidden orders. Broker/dealers and algorithmic traders can place hidden orders in dark pools that automatically sub-penny the NBBO. In the earlier example, the US\$24.9999 fill took place in a dark pool.

Sub-pennying allows the broker/dealer to jump to the front of the line and to be first for execution, which also gives the broker/dealer the best opportunity to capture the spread. Citigroup is one of the stocks that is most susceptible to this practice. At any given time, there are millions of shares on the consolidated bid and millions of shares on the consolidated offer. In the example given (see Table 1), the bid price is US\$4.59 and the ask price is US\$4.60. An investor or trader who wants to buy this stock at US\$4.59 will have to wait in line behind all the other people who placed US\$4.59 bids before them—on a “first come, first served” basis. But broker/dealers

Table 1

CONSOLIDATED QUOTE OF CITIGROUP (20 October 2009)				
Bid	Size (100 lots)	Ask	Size (100 lots)	
US\$4.59	22,892	US\$4.60	30,455	
Time	Last	Shares (100 lots)	Exchange	
11:34:54	4.59	1	NASD	
11:34:54	4.59	2	NASD	
11:34:54	4.59	1	NASD	
11:34:54	4.5901	40	NASD	
11:34:54	4.59	76	NASD	
11:34:54	4.59	12	NASD	
11:34:55	4.5996	6	NASD	
11:34:55	4.60	10	NASD	
11:34:55	4.5999	11	NASD	
11:34:55	4.60	11	NASD	
11:34:55	4.5999	10	NASD	
11:34:56	4.592	5	NASD	
11:34:58	4.59	3	NASD	
11:34:58	4.59	1	NASD	
11:34:59	4.5996	10	NASD	
11:34:59	4.5901	5	NASD	
11:35:00	4.5999	22	NASD	
11:35:00	4.60	22	NASD	
11:35:00	4.5916	7	NASD	
11:35:01	4.59	2	BATS	
11:35:01	4.59	1	BSE	
11:35:02	4.59	7	NSDQ	
11:35:03	4.59	3	NASD	
11:35:03	4.59	1	NASD	
11:35:03	4.5901	1	NASD	
11:35:04	4.60	1	NASD	
11:35:05	4.595	200	NASD	
11:35:05	4.59	1	NASD	
11:35:05	4.59	2	NASD	
11:35:05	4.59	1	NASD	
11:35:05	4.59	1	NASD	
11:35:05	4.591	1	NASD	
11:35:05	4.59	2	NASD	
11:35:05	4.59	1	NASD	
11:35:06	4.5999	90	NASD	

■ Sub-penny trades executed inside NBBO

are allowed to trade in sub-pennies and can step to the front of the line by bidding a slightly better price (US\$4.5901, as demonstrated by trades in the consolidated tape shown in Table 1). The same thing goes for someone wanting to sell at US\$4.60—wait at the back of the line. But the broker/dealer can sell the stock at US\$4.5999, as displayed in Table 1. (Note that many trading platforms default their consolidated tape to two decimal places. It may be necessary to adjust the tape in your trading platform to four decimal places to see the sub-penny trades.)

The entire NBBO is being compromised. The brokerage houses are constantly stepping in front of the best bid or best offer by US\$0.0001 a share and putting themselves at the front of the line. That puts the retail investor at the back of the line.

What's the big deal if we allow the brokerage house to take a penny from the NBBO? Some quick math provides the answer. Average daily volume for Citigroup is 500 million shares a day. Dark pool participation is estimated at approximately 10 percent. In other words, 50 million shares of Citigroup are trading in dark pools. If we assume that 30 percent of the dark pool volume is sub-penny (a conservative estimate, given the data in Table 1), that means 15 million shares of Citigroup are involved in sub-penny. The average bid-ask spread for Citigroup is one cent. Therefore, the broker/dealer stepping to the front of the line by means of sub-penny can capture a US\$0.0098 spread (US\$4.5999–US\$4.5901 in the example). So, 15 million times US\$0.0098 divided by two (because it takes two transactions to capture the spread—the buy and the sell) is equal to US\$73,500 a day. Multiply that by 250 trading days a year, and the total is US\$18,375,000 for one stock. Now consider that more than 2,700 stocks are listed on the NYSE alone. Many of these stocks have bid-ask spreads larger than a penny (bigger spreads equal bigger profits). Further consider that there are 100 stock exchanges in the world. Add the forex and derivatives markets. The numbers quickly become mind-boggling. This is potentially a multibillion-dollar scandal.

### Consequences

Allowing a broker/dealer to step in front of the NBBO and take a fill away from the displayed liquidity provider is unfair to the investor who was displaying the liquidity (i.e., the person who placed the limit order on the NBBO). In the example I cited, the money is taken from the NBBO. Investors and traders make up the NBBO; therefore, this money is being taken from you.

Why doesn't the U.S. Securities and Exchange Commission (SEC) intervene to stop this practice? It did. On 29 August 2005, as part of Regulation National Market System (NMS), the SEC implemented Rule 612,

or the Sub-Penny Rule. The rationale was that sub-pennying was happening in the displayed marketplace.

With the rising expansion of algorithmic trading, traders had created programs to automatically sub-penny the NBBO. The SEC realized this practice was a major problem and adopted Rule 612 to deal with it. The rule “prohibits market participants from accepting or displaying orders or quotations in a pricing increment smaller than a penny, except for orders or quotations in stocks that are priced at less than US\$1 per share.” The express purpose was to “limit the ability of a market participant to gain execution priority over a competing limit order by stepping ahead by an economically insignificant amount,” according to the SEC’s “Regulation NMS” document.

With this rule in place, why does the problem still exist? The rule bans sub-penny *quoting* but not sub-penny *trading*. In its rule release, the SEC specifically permitted broker/dealers to trade in sub-pennies to provide price improvement. It states that “a broker/dealer could, consistent with the proposed rule, provide price improvement to a customer order that resulted in a sub-penny execution.” Broker/dealers are taking advantage of this exemption. They can fill the order in-house, providing their nominal price improvement, or they can use dark pools to hide in front of the NBBO and remain in compliance with the rule (because the order is not displayed).

But this practice does exactly what SEC Rule 612 set out to stop—it disadvantages the liquidity provider. For thinner issues, it is nearly impossible to get an order filled on the bid or offer. In effect, investors and traders are being forced to pay the spread. Over time, this situation will drive liquidity providers out of the market, thereby decreasing the overall depth of the market. Less depth means more volatility. Moreover, by forcing investors to pay the spread, money is being taken away from the investing public.

### A Modest Proposal

The SEC should investigate dark pools and stop broker/dealers and algorithmic systems from hiding in front of the NBBO. The broker/dealer price-improvement process needs to be improved to ensure that liquidity providers are not disadvantaged. At a bare minimum, SEC Rule 612 should be reviewed and opened up for public comments to address these concerns. █

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