



James J. Angel, Ph.D., CFA
Associate Professor of Finance
Georgetown University¹
McDonough School of Business
Washington DC 20057
angelj@georgetown.edu
1 (202) 687-3765
Twitter: GuFinProf

June 19, 2012

Securities and Exchange Commission
100 F St. NW
Washington, DC 20549-9303
Rule-comments@sec.gov

Re: Tick Size study mandated by the JOBS Act

Dear Securities and Exchange Commission:

Here are my comments regarding tick size rules:

In short:

- The optimal tick size is not zero.
- The optimal tick size will be different for different securities.
- The Commission should experiment with letting issuers specify their own tick sizes

¹ I am also an independent member of the boards of directors of the EDGA and EDGX stock exchanges. My comments are strictly my own and don't necessarily represent those of Georgetown University, EDGX, EDGA, or anyone else for that matter.

Background

The tick size is the minimum price variation allowed in trading. For example, one can place an order to buy XOM at \$80.00 or \$80.01, but not at \$80.0000001. In general, the tick for U.S. equities priced higher than \$1.00 is \$.01, and for stocks less than a dollar it is \$.0001 according to SEC Rule 612 for NMS stocks.

The tick size serves several important functions in the equity market. It limits the number of possible price points, which simplifies trading. This makes it easier for humans to understand the current state of the market. Numbers with numerous decimals like 80.058412603 are just plain hard for the human brain to comprehend. Even though much if not most trading these days is machine-generated, as a human I prefer that the market remain human-friendly. Even in the absence of a formal tick rule, humans often cluster their trading activity on round numbers.

The tick also preserves time priority in a limit order book by forcing anyone desiring to jump the queue to pay up for the privilege of doing so. If one believes that time priority is an appropriate tool for allocating trades within a trading platform, then the tick should be an economically meaningful amount. Investors who place limit orders are providing a public service to the market by offering liquidity. They are giving free options to the market that permit others to trade. By exposing their willingness to trade, they are revealing some of their information to the market. A wider tick means that other investors have to pay more to jump ahead of existing orders in a limit order book.

The tick also provides a floor on the bid-ask spread. This benefits liquidity providers by providing a floor on the posted-bid-ask spread. This increases potential revenues to market makers, who will be motivated to post more liquidity when the tick is wide. However, not all liquidity providers are professional market makers. Many patient investors also provide liquidity to the markets by placing limit orders. I personally am a very low frequency buy and hold forever type of investor, and I frequently use limit orders in my trading.

A wider tick is, however, a higher cost to liquidity takers. Investors who demand immediacy have to pay more to cross the bid-ask spread.

The optimal tick is not zero.

The optimal tick for a given stock represents a tradeoff between the benefits to the market (simplicity, limit order protection, and incentives for liquidity providers) against the costs to liquidity takers. In my 1997 *Journal of Finance* article, I develop a mathematical model of the optimal tick size.²

² See "Tick Size, Share Prices, and Stock Splits," *Journal of Finance* 52, 655-681, June 1997. (Abstracted in *Contemporary Finance Digest* 2 (1), 67-68, Spring 1998.)

Even without a mathematical model, solid economic reasoning demonstrates that the optimal tick size is not zero. The tick represents the price of immediacy. This immediacy is provided by patient investors who provide liquidity through limit orders, as well as by market makers who provide liquidity as part of their business model. While consumers of immediacy through market orders would like the price of immediacy to be lower, providers would like the price to be higher. To say that the price of immediacy should be zero is like saying that the price of bread or gasoline should be zero: if the price is zero, then no one will produce it.

Wider ticks don't necessarily hurt retail investors.

Let me reiterate this point. A wider tick benefits patient investors who provide liquidity to the markets. This includes patient retail investors who trade with limit orders, as well as patient institutions following patient trading strategies.

The tick produces more than immediacy.

Brokerage firms that bring in customer order flow can capture some of the bid-ask spread, either by internalizing the order flow or receiving direct payments or other benefits. In order to attract order flow, brokerage firms engage in a number of activities that help to improve the information environment for companies. For example, they produce research reports, and facilitate meetings between company executives and the investment community. Investors are more likely to invest in companies for which there is a good information environment. In a market with thousands of public companies, small companies need for there to be credible third parties to provide information to investors. Thus, a wider tick can help to support the liquidity of smaller stocks.

The empirical evidence does not support the notion that \$.01 is the optimal tick.

In 1997 the standard U.S. tick size dropped from $\$1/8$ to $\$1/16^{\text{th}}$ and then to \$.01 in 2001. Numerous studies of the changes generally found that bid-ask spreads decreased, while quoted depth decreased. However, there is more to market quality than just a narrow bid-ask spread. Indeed, there is some evidence that institutional trading costs actually went up.³

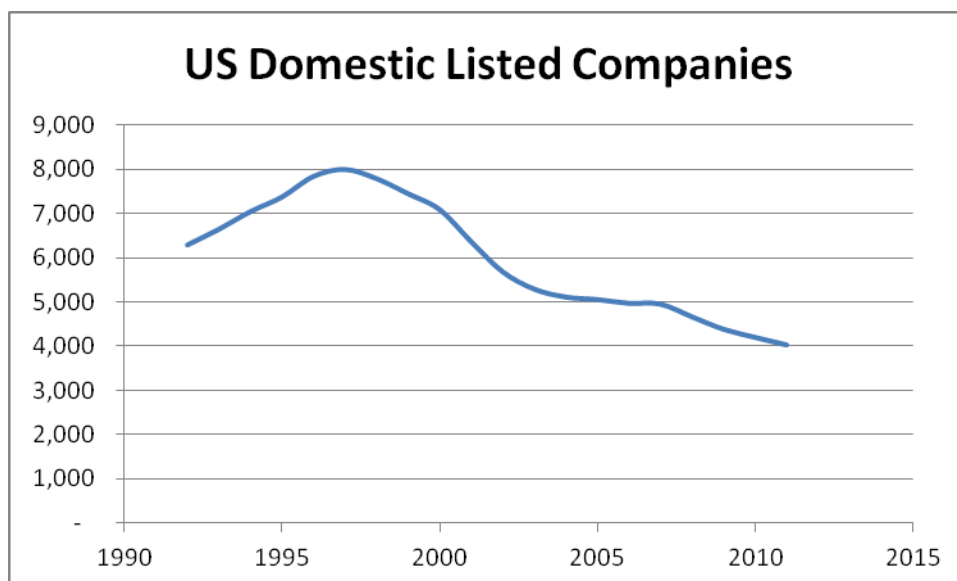
Unfortunately, in all of the zeal to reduce the tick size in the early 2000s, there were no scientifically controlled experiments of different tick sizes, only before and after studies. Indeed, the Commission's

³ See, for example, Michael A. Goldstein and Kenneth A. Kavajecz, "Eighths, sixteenths, and market depth: changes in tick size and liquidity provision on the NYSE", *Journal of Financial Economics* 56 (2000) 125-149, and David Bourghelle and Fany Declerc, "Why markets should not necessarily reduce tick size," *Journal of Banking and Finance* 28 (2004) 373-398.

decimalization release contemplated such experiments, but the industry went straight to pennies without experimenting with \$.05 or \$.10 ticks.⁴ Even if \$.01 was an improvement over \$.125, it does not imply that \$.01 is better than \$.02 or \$.05.

Previous studies of tick size changes have neglected capital formation.

Most of the empirical work that has examined tick size changes has focused on short-term measures such as bid-ask spread and posted liquidity. There is a dearth of empirical work that looks at the wider impacts of changes in tick size. By reducing revenues to brokerage firms, the tick size reductions reduced the incentives for brokers to draw attention to smaller companies. Is it a coincidence that the number of domestic US listed companies began its steady decline in 1997 when the US began to reduce tick sizes? I think not, although to be sure there were many other changes in market structure occurring at the same time.



One tick does not fit all.

It is clear that there is a tradeoff between the costs and benefits of a wider tick size. It is quite logical that the optimal tradeoff will be different for different companies. Large, liquid companies may have such sufficient liquidity that additional incentives for liquidity providers are unnecessary. On the other hand, smaller and less liquid companies may benefit from providing relatively more protection for liquidity providers. Price alone is not the only determinant of the appropriate tick size.

⁴ See Order Directing the Exchanges and the National Association of Securities Dealers, Inc. To Submit a Decimalization Implementation Plan Pursuant to Section 11A(a)(3)(B) of the Securities Exchange Act of 1934, Release No. 34-42360/January 28, 2000, File No. 4-430 <http://www.sec.gov/divisions/marketreg//34-42360.htm>

Let issuers pick their tick.

Who, then, should determine the tick size for a particular company? Should the tick size be chosen by government fiat, exchange rule, or some other method? I believe that the issuers are in the right position to assess the tradeoffs and choose the appropriate tick size for their companies. They have the right incentives to take the actions that will maximize value for their shareholders.

Issuers already have some control over tick size through their ability to split or reverse split their stock. A stock split increases the effective tick size relative to price as the one penny tick is now a larger percentage of the price. Similarly, a reverse split effectively decreases the effective tick size relative to price. However, there are serious institutional impediments to stock splits. Both NASDAQ and the NYSE charge fees to issuers for splitting stock. Furthermore, there are arbitrary restrictions placed on low priced stocks. Brokerage firm, FINRA, and Fed rules reduce the marginability of stocks under \$5.⁵ Stocks that drop below \$1 and stay there are delisted. Thus, a company might be understandably reluctant to split its stock into the single digit share price range even if that would result in an optimal tick size (given the constant penny tick) relative to the share price.

It is not very difficult for the financial services industry to handle a regime in which each issuer can pick its own tick size. The issuer would inform its listing exchange of its preferred tick, and the information would be contained in the standard security master information that is disseminated. Proposed wording for the changes to Rule 612 is attached.

If you have any questions, feel free to email me at angelj@georgetown.edu or call me at (202) 687-3765.

Respectfully submitted,

James J. Angel, Ph.D., CFA
Georgetown University
McDonough School of Business
Washington DC 20057
(202) 687-3765

⁵ For an example, see Federal Reserve Regulation T, FINRA Rule 4210, and for a brokerage example, http://www.schwab-global.com/public/schwab-gcb-en/investment_choices/margin_loans?cmsid=P-955791&lvl1=investment_choices&lvl2=margin_loans

Proposed Changes to SEC Rule 612

Here are my proposed changes to SEC Rule 612. Note that section b is made redundant by the changes to section 1, and section c is already unnecessary since the Commission clearly has such exemptive power for all of its rules under Section 36 of the '34 Act.

Proposed Rule 612

- a. No national securities exchange, national securities association, alternative trading system, vendor, or broker or dealer shall display, rank, or accept from any person a bid or offer, an order, or an indication of interest in any NMS stock priced in an increment smaller than *the amount selected by the issuer and communicated by its listing exchange*. ~~\$0.01 if that bid or offer, order, or indication of interest is priced equal to or greater than \$1.00 per share.~~

- b. ~~No national securities exchange, national securities association, alternative trading system, vendor, or broker or dealer shall display, rank, or accept from any person a bid or offer, an order, or an indication of interest in any NMS stock priced in an increment smaller than \$0.0001 if that bid or offer, order, or indication of interest is priced less than \$1.00 per share.~~

- c. ~~The Commission, by order, may exempt from the provisions of this section, either unconditionally or on specified terms and conditions, any person, security, quotation, or order, or any class or classes of persons, securities, quotations, or orders, if the Commission determines that such exemption is necessary or appropriate in the public interest, and is consistent with the protection of investors.~~

Copyrighted material redacted. Author cites:

Angel, James J. " Tick Size, Share Prices, and Stock Splits " *The Journal of Finance*, Vol. 52, No.2 (Jun., 1997),655-681. Web. 21 June 2012.

<http://links.jstor.org/sici?sici=00221082%28199706%2952%3A2%3C655%3ATSSPAS%3E2.0.CO%3B2-5>