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Limit orders and the alleged Nasdaq collusion

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Abstract

Different methods are used by the NYSE/Amex and the Nasdaq to accommodate limit orders received from investors. This accounts for at least part of the excess of Nasdaq spreads over NYSE spreads, adjusted for trading volume, and is a factor in determining this excess that is independent of collusion on the Nasdaq. The spread-comparison evidence given by others to support their belief that there is collusion among market makers on the Nasdaq therefore overstates the probability of collusion and its significance if it exists.

Keywords: Stocks; Spreads; Financial; Nasdaq; Collusion

JEL classification: G14; G18; D23

The evidence supporting the belief that market makers on the Nasdaq have colluded to set spreads is based largely on a comparison of the spreads and their distribution on the NYSE and the Nasdaq (Goldstein, 1993; Christie and Huang, 1994; Christie and Schultz, 1994; Barclay, 1995). These studies show that (1) stocks on the Nasdaq trade at larger spreads than similarly active stocks on the NYSE, (2) spreads become smaller when stocks migrate from the Nasdaq to the NYSE, (3) one-eighth spreads and odd-eighth spreads are few on the Nasdaq as compared to the NYSE, and (4) the distribution of spreads is bimodal on the Nasdaq but unimodal on the NYSE, unimodal. The present paper argues that in important respects this evidence exaggerates the probability of collusion on the Nasdaq and, if there is collusion, that it overestimates the degree to which this affects spreads.

The basis of my argument is found in the different ways the two exchanges handle limit orders. On the NYSE, the best prices available are made available to the general public for trading purposes, whether these come from limit orders or the specialist. Limit orders coming to the NYSE from investors are the major

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vehicles for servicing market orders quickly. In contrast to this, limit orders coming to the Nasdaq are treated as offers to deal with market makers, not as offers to the general public. In general, for the Nasdaq, prices set by market makers are the only trading prices made available to the public. The price at which a market order is executed on the Nasdaq depends on the set of quotations maintained by Nasdaq dealers who make a market in the stock. Market makers, although obligated to make their own quotes known, and to trade at the terms offered in these quotes (to a depth of 1000 shares at each end of the quote), are not obligated to reveal prices offered in the limit orders they may have received from outsiders. Thus, whatever the intent or the understanding of investors who submit limit orders, and however their limit orders may influence market makers, their orders are properly interpreted as an offer to the Nasdaq market maker, or makers, receiving it and not as an offer made to the general public.

This procedural difference means that measured spreads on the two exchanges usually come from different sources. On the Nasdaq, they come from market makers. On the NYSE, for a large percentage of quotations, they come from investor limit orders. The set of potential heterogeneous offer makers is then much smaller on the Nasdaq than it is on the NYSE. This alone, without appeal to Nasdaq collusion, must yield an average NYSE spread that, for similar stocks, is smaller than on the Nasdaq.

It would be of interest to compare spreads set by Nasdaq market makers to spreads set by NYSE specialists for comparable stocks *when these specialists trade for their own account*. Such a comparison would remove some of the confusion created by the presence of spreads set by limit orders. If Nasdaq market makers collude, the spread they quote, which is for trading on their own account, should be greater (relative to transaction cost) than the spread quoted by NYSE specialists when they offer to trade for their own account. This comparison is not made in the studies whose data are offered in support of the collusion hypothesis, and the comparison that is made surely makes the measured difference in spreads larger than would be given by this more relevant comparison.

The distortion just discussed is exacerbated by considerations that underlie the reservation prices offered by outside investors, on one hand, and specialists and market makers, on the other hand. Neither the Nasdaq market maker nor the NYSE specialist is in the business of speculating on stock performance over time. When trading for their own accounts, both derive earnings by recycling a stock, selling at ask prices and buying at bid prices if they expect the former to exceed the latter by more than the cost to them of transacting for their own accounts.[1] Although a minimal inventory of the stock is useful to facilitate this recycling, and

[1]Unlike the NYSE specialist, Nasdaq market makers are not required to maintain an orderly market.

is at risk of fluctuation in its value, neither market makers nor specialists, when in their institutional roles, act in anticipation of stock performance.

Outside investors, whether they submit limit or market orders, do not anticipate recyling stocks as do specialists and market makers. Instead, they generally anticipate longer term investment, or, perhaps more accurately, speculation. The return they earn then depends on how well they forecast the future pattern of the prices of the stocks they buy and sell.

The spread between ask and bid prices that emerges from the reservation prices contained in investor limit orders, therefore, does not have a cost-based minimum like that which should set a floor to the spread emanating from the reservation prices of specialists and market makers when trading for their own accounts. Rather, the spread set via investor limit orders has a theoretical minimum that is only epsilon greater than zero; the actual spreads are determined by the degree of difference in judgments about a stock's value (i.e., of its future performance), and this difference can be quite small in a particular case. The judgments relevant to effective spreads come from prospective buying investors who are most optimistic (the bidders) and prospective selling investors who are most pessimistic (the askers), but who are not so optimistic and pessimistic that their offers cross. Transaction costs that would be incurred by the NYSE specialist (or the Nasdaq market maker), which would set the floor to any quotation he makes to trade on his own account, do not set a floor to bid-ask spreads set by investors. The specialist, when executing transactions for other parties, cannot profit from recycling stocks through his own account, but when he acts as pure intermediary, facilitating exchanges made by other principles, he is reimbursed by commission. It is therefore possible for him to allow spreads to be set entirely by limit orders if he chooses, and, on actively traded stocks, he in fact participates as principle in only a small fraction of total trades.

The absence of a transaction cost floor for spreads set on the NYSE by investor limit orders is an important consideration in regard to the evidence claimed for the belief that Nasdaq market makers collude. The specialist may be expected to undercut investor offers if they would result in spreads that would exceed his cost of transaction, but he cannot raise spreads that are less than his cost of transactions. It follows that NYSE spreads can often be expected to be less than the specialist's transaction cost often, since limit orders are important setters of the spread on the NYSE. In contrast to this, only by mistake will Nasdaq spreads be less than market-maker transaction cost.[2]

[2]The absence of a floor, determined by specialist transaction cost, when spreads, in fact, are set by investor limit orders on the NYSE has escaped notice in the theory of the spread that is now the standard tool of financial market analysis. The basic theory (introduced by Demsetz, (1968)), which links size of spreads to the cost of transacting, is still the standard theory. In view of the text discussion of the role of limit orders, this theory obviously should be reformulated, but this is a topic for a different paper.

Thus, the greater heterogeneity of offers that emanate from investors, who outnumber specialists and market makers, is not the only force working to make spreads smaller on the NYSE than on the Nasdaq for similar stocks. There is also the fact that very often the NYSE spread is being set in the absence of a transaction cost floor. These two conditions reinforce each other and suggest that the excess of Nasdaq spreads over NYSE spreads can be explained, at least in part, by institutional factors that do not involve collusion. The same conditions imply that spreads should be reduced when stocks migrate from the Nasdaq to the NYSE and that small spreads, such as one-eighth spreads, should occur more frequently on the NYSE. However, the relative infrequency of odd-eighth spreads and the bimodal distribution of spreads on the Nasdaq uncovered by Christie and Schultz (1994), are not explained by the institutional differences that are the focus of the present paper. Hence, the conclusion of this paper is not that collusion is absent from the Nasdaq. Instead, it is that the evidence that has been given to demonstrate the presence of collusion exaggerates the probability of collusion and, if collusion is present, also exaggerates the fraction of the excess of Nasdaq over NYSE spreads that results from the collusion.

Measures recently adopted by the Securities and Exchange Commission have as their purpose a modification of Nasdaq procedures that gives the public greater access to limit order reservation prices. The measure should bring about a reduction in Nasdaq spreads, but not necessarily because the force of an alleged collusion has been attenuated. The reduction in spreads might result simply from the open role in the spread-setting process that will be played by investor limit orders. An additional consequence of the SEC's measures is the reduction or the elimination of the revenue that Nasdaq market makers now receive from recycling stocks held temporarily in their inventories. The spreads set on the Nasdaq will now more often be those of outside investors, and the transactions that take place on the Nasdaq will now more often be those executed for other parties. With recycling of inventory revenue reduced or eliminated, market makers, if they are to remain in business, will require procedural changes that result in new sources of revenue. These probably would mimic the procedure used by the NYSE, which allows the specialist to receive commissions for transactions using his services on behalf of other parties rather than for buying or selling stock from his own account.

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