



Dimensions of execution quality: Recent evidence for US equity markets[☆]

Ekkehart Boehmer*

Mays Business School, Texas A&M University, College Station, Tx, 77845, USA

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Abstract

I analyze market-order execution quality using order-based data reported in accordance with Securities and Exchange Commission Rule 11Ac1-5. These data facilitate a comprehensive investigation of multiple dimensions of execution quality, including measures of costs and speed, for large samples of common stocks on Nasdaq and the NYSE. The evidence is consistent with competitive equity markets. Overall execution costs on Nasdaq exceed those on the NYSE, but orders execute faster. This relationship reverses for larger orders exceeding 1,999 shares. The apparent trade-off between costs and speed suggests that

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*Tel.: +1 979 845 1224.

E-mail address: eboehmer@cgsb.tamu.edu.

inferring execution quality from costs alone could be problematical. It also illustrates the need for models of trader behavior that can accommodate multiple dimensions of execution quality. © 2005 Elsevier B.V. All rights reserved.

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1. Introduction

The economic importance of order execution quality in equity markets has generated substantial attention from financial economists. Yet, data limitations have largely confined analysis to a single dimension of execution quality, the out-of-pocket costs of completing an order, and have required approximate algorithms to estimate these costs.¹ While costs are probably the single most important component of execution quality, the recent proliferation of alternative trading systems, automated trading algorithms, and online trading suggests that the speed of order executions is also important to traders. For example, [Boehmer et al. \(2004\)](#) find that markets generally receive more order flow when either execution costs decline or execution speed increases. ([Blume, 2001](#), also argues that execution speed is important. He cites a May 2000 survey in which 58% of online traders rate speed as more important than a favorable price.)

This study uses novel data that eliminate the need for approximations and allow a simultaneous analysis of two dimensions of execution quality, costs and speed. I compare market-order executions on the two dominant U.S. equity markets, the New York Stock Exchange and the Nasdaq Stock Market. Reports published in accordance with Securities and Exchange Commission (SEC) Rule 11Ac1-5 (Dash 5) allow a comparison based on actual orders. Since fall 2001, the rule has required U.S. market centers to report various standardized measures of execution quality for orders below 10,000 shares in nearly all publicly traded securities. Compared with the traditional approach of estimating execution costs from trade reports, order-based analysis does not require approximate algorithms to determine trade direction and the timing of benchmark quotes. Moreover, Rule 11Ac1-5 makes the average order execution speed, or the period between order receipt and execution, publicly available.²

¹Extant data sources report the size and price of trades but do not reveal details of the underlying buy and sell orders. Because knowing which side initiated the trade is essential in estimating execution costs, researchers resort to algorithms to infer the initiator by comparing trade prices with prevailing quotes and past trades. [Lee and Ready \(1991\)](#), among others, show that these algorithms are fairly accurate but cannot classify all trades correctly. These residual classification errors perhaps are not random and conceivably lead to substantial biases in estimated execution costs.

²Throughout the paper, the term “execution quality” refers to several components that concern a trader, including effective spreads, realized spreads, and the speed of execution. Effective spreads are based on the difference between the trade price and the prevailing quote midpoint, while realized spreads are a forward-

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