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Decimalization, adverse selection, and market maker rents

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Abstract

I address the issue of how decimalization impacts the information acquisition decision of traders. I show that traders have less of an incentive to improve the quality of their information and, consequently, trades tend to be less informative following a reduction in the minimum tick. This result is consistent with the empirical finding that reductions in the minimum tick lead to declines in the adverse selection component, a finding counter to the theoretical predictions in the literature. This result also explains how the predicted savings from decimalization can exceed even *total* market maker profits. In addition, I show that even if market makers are perfectly competitive, a minimum tick can lead to multiple spread equilibria, some of which being more than one tick away from the underlying, or “no-tick”, equilibrium spread. Finally, I discuss the implications of the model for payment for order flow/internalization and the existence of an optimal tick size. © 2001 Elsevier Science B.V. All rights reserved.

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1. Introduction

The proposed decimalization of US markets has generated a good deal of debate, the bulk of which has centered around the potential gains accruing to investors and the elimination of rents accruing to liquidity suppliers.¹ The minimum tick, it is argued, prevents liquidity suppliers from quoting competitive spreads. Consequently, investors incur excessive transaction costs, with this excess accruing to liquidity suppliers. A decline in spreads following a reduction in the minimum tick would be consistent with the notion that liquidity providers were earning non-competitive rents prior to decimalization. However, such an interpretation implicitly assumes that the other components of the bid–ask spread (i.e., fixed costs, inventory, and adverse selection) have remained unchanged. If any of these components decline due to decimalization, it may be the case that liquidity providers were earning competitive profits prior to decimalization and that the savings to investors due to decimalization came from a decline in one of the other costs of trading.

Recent studies by Bacidore (1997) and Bessembinder (1997) have documented that trading costs, as measured by the bid–ask spread, fall significantly following tick reductions, but part of this reduction is due to a decline in the adverse selection component.^{2,3} This documented decline in the adverse selection component conflicts with the theoretical predictions of Anshuman and Kalay (1998) who argue that adverse selection should *increase* following decimalization. This raises an interesting question: why would decimalization lead to a *reduction* in the adverse selection component of the bid–ask spread?

To answer this question, I develop a model similar to Glosten and Milgrom (1985). However, information acquisition in my model is endogenous. Initially, some traders are exogenously endowed with valuable, but imprecise, information regarding the value of the asset. These traders have the option to increase the precision of their information at a cost. I show that traders are more willing to expend resources to increase the precision of their information when a minimum tick is imposed. The intuition behind this result is that the existence of a minimum tick makes spreads wider than they otherwise would be. This increases the costs associated with incorrect information, specifically, the costs incurred by investors who buy or sell a fairly-priced asset. Consequently, traders are willing to expend

¹ See, for example, Ahn et al. (1996, 1998), Bacidore (1997), and Porter and Weaver (1997), which document significant reductions in trading costs. See Harris (1997) for a review of the decimalization literature.

² Bacidore (1997) estimates the total annual savings to investors to be over \$139 million (Canadian) for the 318 stocks in his sample.

³ Bessembinder (1997) uses the term “price impact” in describing what Bacidore (1997) refers to as the adverse selection component, though both studies utilize the Huang and Stoll (1996) measure.

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