



## Liquidity costs: Screen-based trading versus open outcry

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### Abstract

The results reported in this paper challenge the popular belief that screen-based trading offered lower liquidity costs than the open-outcry approach during its first year of side-by-side operation in the U.S. financial derivatives market. Using time and sales data from the Chicago Board of Trade (CBOT) market profile data series, effective bid–ask spreads are estimated on the basis of daily and intraday measures of the Thompson–Waller and Smith–Whaley estimators. We find liquidity costs on the screen-based system vary with time and the level of floor trading activity. In particular, a one-tick market is observed just before the opening of the Chicago trading floor (6:30 to 7:30 am). However, subsequent intraday spreads exhibit the familiar “reverse J-shaped pattern”—highest following the opening of floor trading, declining until afternoon, and then increasing until close. Meanwhile, daily spread estimates average almost a quarter-tick higher on the screen-based market relative to the one-tick spread commonly associated with open outcry. This relationship remained robust across sample time-series and conservative price-change specifications. Since the study was conducted, electronic trading has become the predominant exchange medium for financial derivatives at the CBOT, following the example set in Europe’s traditional futures exchanges, e.g. France’s Matif, Germany’s Deutsche Bourse and the U.K.’s Liffe.

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*Innovation makes enemies of all those who prospered under the old regime, and only lukewarm support is forthcoming from those who would prosper under the new. Their support is indifferent partly from fear and partly because they are generally incredulous, never really trusting new things unless they have tested from experience.*

~ Machiavelli

## 1. Introduction

Stigler (1968) reminds us that competition motivates market participants to provide goods and services skillfully and economically, and at times experiment with new ways of doing business. This behavior is exemplified by The Chicago Board of Trade's (CBOT) advancement of e-trading platforms—innovations which gained an early acceptance in Europe, and have since transformed the mechanics of futures trading around the globe.<sup>1</sup> Some futures exchanges have relied upon screen-based systems as a way to supplement open outcry markets by extending trading hours; examples include the Chicago Board of Trade's (CBOT's) Project A and a/c/e electronic trading systems, the New York Mercantile Exchange's ACCESS system (Ulibarri, 1998), and the Automated Pit Trading system used at the London International Financial Futures Exchange (LIFFE). In other applications, futures exchanges opt for exclusive use of screen-based systems, e.g., EUREX, the electronic German-Swiss exchange which formed with the merger between Deutsch Terminbörse (DTB) and the Swiss Options and Financial Futures Exchange (SOFFEX); and Euronext.liffe, which merged the derivatives markets of Amsterdam, Brussels, LIFFE, Lisbon, and Paris under a single electronic platform, LIFFE CONNECT®.

Following these examples, the CBOT currently pursues a marketing policy of simultaneous open outcry and electronic trading of its Treasury futures products, i.e., “side-by-side” trading (a.k.a. parallel trading). CBOT initiated parallel trading on September 28, 1998, by extending Project A electronic trading hours to run concurrently with open outcry. On August 27, 2000, CBOT broadened the electronic market via its a/c/e platform, offering direct access to its 30-year T-bond contracts in Asia and Europe. The trading strategies in the expanded electronic market rely heavily on narrow bid–ask spreads and high liquidity, thereby allowing efficient entry and exit from the market.

The focus of the present study centers on the liquidity costs on CBOT's electronic market over the first year of parallel trading, before the a/c/e market expansion with EUREX. Liquidity costs are measured on the basis of the effective bid–ask spread, i.e., the spread between the actual market prices of a sell order and a buy order. The wider the spread, the higher the liquidity costs in providing immediate exchange (Demsetz, 1968). However,

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<sup>1</sup> Early studies by Baptiste, Kang, and Rosenfeld (1993), Sarkar and Tozzi (1997), and Price Waterhouse (1997) found global use of electronic trading systems (from 8 systems in 1990 to about 40 in 1997, with electronic trading volume increasing from 7% in 1989 to 18% in 1996). More recently, the rapid growth of EUREX points to the increasing importance of electronic systems in global derivatives trading, overwhelming floor traders at LIFFE and motivating CBOT to broaden its screen-based market.

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