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# Market liquidity and depth on two different electronic trading systems: A comparison of Bund futures trading on the APT and DTB

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## Abstract

This paper investigates the liquidity of two different electronic trading systems – the APT system at LIFFE and the DTB system. First we describe the different characteristics of the trading systems and give potential reasons as to why they might differ in liquidity. Second we investigate empirically the liquidity provided by the two trading system. The comparison is especially interesting because the Bund Futures instruments traded are identical and the markets are open simultaneously. The intra-day data used in the study is from August 1997 to February 1998. The results show that the APT has smaller spread but the DTB is slightly deeper. © 2000 Elsevier Science B.V. All rights reserved.

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## 1. Introduction

The Bund futures contract, which is based on the German government's 10-year bond, is the most actively traded bond future contract in Europe. The London International Financial Futures Exchange (LIFFE), with its open

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outcry trading and Automated Pit Trading (APT) has historically dominated the volume in this instrument since its inception in September 1988. Lately, however, the Deutsche Terminbörse (DTB<sup>1</sup>), with its computerized trading system, has significantly closed the gap in volume between the two exchanges, and now claims to be the leading exchange in Bund futures trading with a market share of approximately 83%.

Studies of liquidity in Bund futures markets have concentrated so far on the comparison of open outcry trading at LIFFE and the DTB trading system. Shyy and Lee (1995) compare quoted spreads and information asymmetry, and test for arbitrage opportunities in the two trading systems. Kofman and Moser (1995) compare spreads and information flows on the DTB and LIFFE Bund markets. Franke and Hess (1995) measure liquidity by the market share each trading system is able to capture and compare market shares in situations differing of information intensity. Pirrong (1996) compares spreads and market depth across the two trading systems. Breedon and Holland (1997) compare spreads and the composition of the spreads across the two trading systems. Automated Pit Trading, the system used as an after-market after pit trading closes, has not been a subject of study as it has been open simultaneously with the DTB system only 10 minutes per day. However, as of August 1, 1997, the DTB extended Bund Futures Trading by 90 minutes, and now the two electronic systems are simultaneously open for 1 hour 35 minutes per day. This provides the opportunity to study the two electronic systems in an empirically meaningful context.

A comparison of the APT and DTB trading systems is especially interesting because the instruments traded are effectively identical, presenting the opportunity for a potentially controlled experiment of two trading system characteristics: the openness of the limit order book and trader anonymity. Additionally, the APT share of Bund future's trading has collapsed even more severely than the full exchange market share figures, from 60.3% on the first full trading week in August 1997 to 26.4% on the last trading week of February 1998. Whether this result was caused by inferior market liquidity on the APT market is an interesting question.

This paper sets out to describe the different characteristics of the trading systems and to give potential reasons as to why they might have created a liquidity differential between the two systems. We examine empirically the liquidity provided by the two different electronic trading systems as measured by (1) the effective bid–ask spread and by (2) market depth. The intra-day data used in the study is from LIFFE and DTB and covers the period from August 1997 to February 1998.

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<sup>1</sup> On September 17, 1998 the DTB and the Swiss Options and Financial Futures Exchange (SOFFEX), and the MATIF of Paris announced their merger to create a common market planned to be fully integrated by 2001. For simplicity, we will refer to the DTB with its own name.

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