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# Developing the exchange traded market for government bonds: Effect of recent quote rule changes in South Korea

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## ABSTRACT

The 2010 new quote rule changes imposed on the exchange market primary dealers (PDs) for the Korea Treasury Bonds (KTBs) have increased the exchange market quality for the 5-, 10- and 20-year maturity KTBs. Knock-on effects have subsequently led to an increase in market quality for the 5- and 10-year maturity bonds in the over-the-counter (OTC) KTB market. However, the imposition of a spread width below a reasonable level in the KTB exchange traded market for the 3-year maturity KTB has led to a significant reduction in trade volume in the OTC KTB market for bonds of the same maturity.

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## 1. Introduction

Emerging East Asian countries have traditionally focused on building bank financial systems rather than developing its bond markets. The underdevelopment of the bond markets meant that the banks were relying heavily on short-term foreign capital with an over-dependence on the banking system for domestic financing. This led to a lack of a buffer within the system and is viewed to be one of the root causes for the 1997 Asian financial crisis. The financial turmoil resulting from the crisis has led to a reconsideration of the banking system and a realization regarding the necessity of the bond market to supplement bank financing.

In the case of South Korea, the government focused its energies on the development of the exchange market rather than the over-the-counter (OTC) market due to the greater transparency and price discovery function of the exchange market. In particular, most of its policies were focused on the development of the indicator Korea Treasury Bonds (KTB)<sup>1</sup> market. In light of these efforts, the South Korean government compelled primary dealers (PDs) to quote narrower bid-ask spreads (narrower for the shorter maturity bonds) for the indicator KTB in the exchange market in January 2010. The evaluation of the PDs qualification has since been linked to the PDs compliance to the tighter spread quote requirements.

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<sup>1</sup> The indicator Korea Treasury Bonds refers to the 3, 5, 10, and 20 year maturity on-the-run bond issues.

In this study, we attempt to evaluate the effect of the recent bid-ask spread regulation imposed on the PDs in terms of market quality for both the exchange and OTC markets. We also examine whether there are any changes to the components of bid-ask spread using intraday quotes and trade data. The quoted spreads have important consequences on market quality for several reasons. If the spreads are too wide, it leads to higher trading costs for investors. This was one of the main drivers for the enactment of the new regulations by the South Korean government. However, if spreads are narrowed forcibly, it may lead to a decrease in market depth and make it difficult for dealers to respond to market movement.

Although there are larger bond markets in the world, most of them have OTC structures, which makes accurate intraday bond data, that includes bid/ask quotes and transaction information, difficult to come by. We have access to real-time quotes and trade data from Korea Exchange's (KRX) electronic trading platform. This presented us with a unique opportunity to analyze the effect of the regulated spread restrictions on market quality.

In this paper we also study whether the imposition of the new rules had any impact on the OTC market. Since the exchange and OTC markets provide different features and advantages, it is imperative to consider how a change in one market affects the other when assessing the impact on the overall market. If the new rule in the exchange market helps to build a more transparent market and improve the price discovery function, it can also improve the quality of the OTC market due to knock-on effects (Park, Shin, and Rhee, 2007). In contrast, an improvement in one market might have been achieved via the sacrifice of another (Jeong, 2011). Hence, the effect of systematic changes in one market on other markets is an important empirical question.

To examine how the new regulation affects market quality, we investigate whether the new rule has caused a change in trading costs and liquidity on both the exchange and OTC indicator KTB markets, which is comprised of the 3-, 5-, 10-, and 20-year maturity on-the-run KTB markets. We also examine whether the new rule has led to changes in the bid-ask spread components in the exchange KTB markets using the model of Huang and Stoll (1997). We then examine whether spread widths for various maturities served as binding constraints for the actual spread widths, as different spread rules were imposed for the different bond maturities.

Our results indicate that, overall, the quote rules imposed on the PDs have a positive effect on the market quality of the KTB exchange market, resulting in a decrease in trading costs and an increase in market depth and trading volume. Furthermore, the bid-ask spread component analysis shows that the new quote rules have reduced dealers' rent. In addition, for the 5- and 10-year maturity bonds, the rule changes in the exchange market seem to have caused knock-on effects to the OTC market quality. However, for the 3-year maturity bonds, the mandatory bid/ask spread rules seem to have limited the PDs ability to react to market movements. Although the enforced narrower spread led to an enormous increase in the exchange traded volume for the 3-year maturity bonds, to some extent, it is at the expense of decreasing the OTC market liquidity.

The results of this paper suggest that policy makers must consider what optimum level of bid/ask spreads is required in order to develop the market without any distortion. The application of the different rules in South Korea along with the results reported in this paper could serve as a good benchmark for other emerging market countries that are planning to develop their bond markets.

The remainder of the paper proceeds as follows. Section 2 introduces the KTB market and the new quote rules imposed on the PDs in the exchange market since January 2010 and describes the data used in the paper for the analysis. Section 3 provides the analysis on the effects of the new quote rules on transaction costs and liquidity for both the KTB exchange traded and OTC markets. We decompose the components of bid-ask spread in Section 4 and examine the effect of maturity-wise spread restrictions in Section 5. Summary with concluding remarks are given in Section 6.

## 2. 2010 quote rule changes and data used for analysis

Generally, bond trading markets have been developed in an OTC structure instead of a centralized exchange format. However, the Europe and U.S. markets have developed exchange oriented electronic trading systems in order to resolve issues related to the efficiency and transparency of the market. Similarly, the South Korean government opened the electronic based system for KTB trading in March 1999, with the PDs acting as the market makers for the system. Qualified PDs have an obligation to show two-way quotes for the indicator KTBs in order to enable effective trading of KTBs in the exchange market. In return, the PDs receive a variety of benefits such as exclusive bidding rights for KTB primary issuances, lower cost of government funding, and non-competitive bidding rights that are exercisable when interest rates fall. Nonetheless, one of the main reasons for the PDs to go along with the newly imposed rules is to maintain a positive relationship with the government.

Although bond dealers do apply for PD qualification, they tend to prefer the OTC market for the actual trading of bonds. This is because most of the PDs also serve as brokers in the OTC bond market and earn substantial brokerage fees for their services. Hence, there is no incentive for the dealers to quote narrow bid/ask spreads. Due to these reasons, the bid-ask spreads quoted by the PDs for the exchange (due to their obligation as a PD) tended to be wide and there was no active trading of KTBs in the exchange market until 2002. In October 2002, in an effort to stimulate the exchange market, the government imposed obligations on the PDs to trade their entire indicator bond volume and more than 20% of the other (non-indicator) bonds in the exchange ("compulsory trading of Treasury bonds in the exchange"). Subsequently, the mandatory trading ratio rose to 40% in January 2003 and to 50% in June 2004. However, the imposed rules only served as

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