MARKET INSIGHTS

Does the Introduction of a Market Maker improve Market Quality: Evidence from the SFE 3 Year Treasury Bond Options Market[1]

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INTRODUCTION

In this fourteenth edition of Market Insights Professor Alex Frino, Dr Andrew Lepone and Angelo Aspris from the Discipline of Finance at the University of Sydney provide an assessment of an exchange initiative to introduce a designated market maker in Commonwealth Treasury Bonds in February 2005. Their work specifically addresses the effects of this augmentation to the market structure, on trading costs to clients, market depth and overall trading activity and highlights the incremental benefits of this initiative. I trust you will find it both interesting and useful when examining the opportunities that SFE might present to your own particular organisations

Regards

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Does the introduction of a market maker improve market quality: Evidence from the SFE 3 Year Treasury Bond Options Market[1]

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EXECUTIVE SUMMARY

The Sydney Futures Exchange (SFE) introduced new market maker obligations in Commonwealth Treasury Bond (CTB) Options in 2005. This change was introduced as part of an exchange initiative to innovate and improve trading efficiency. This paper analyses the impact of the introduction of a designated market maker on market quality, specifically analysing the effect on trading costs, market depth and overall trading activity. The key finding reported in this paper is that market participants have benefited from the introduction of a market maker in SFE Treasury Bond Options. This paper documents an increase in overall market depth as well as an increase in trade size and volume. Additionally, we find a decrease in the volatility of the bid-ask spread is attributable to the presence of the market maker in the new market structure.

1 This market insights is a subset of an upcoming academic paper "Does the introduction of a specialist improve market quality in the options markets"

Introduction

Options exchanges have undergone a marked transformation in the last several years. A raft of fundamental market reforms has seen the quality of these markets improve considerably, with narrower spreads and increased liquidity contributing to better customer executions.[2] This paper examines the impact of a recent market reform on the SFE with the introduction of a designated market maker in 3 Year CTB Options.[3] This paper addresses three main questions: (1) Has there been a change in the cost of execution?; (2) Is there an increase in market liquidity at the best available quotes?; (3) Has trading activity increased in the new market structure?

Market maker (herein MM) obligations were introduced in the 3Yr CTB Options on February 16, 2005.[4] This paper examines trade and order book data[5] for the period November 16, 2003 to May 16, 2006 (fifteen months either side of the introduction) for Options on 3 Year Commonwealth Treasury Bonds. This data includes both serial and quarterly contracts, however, excludes intra-day and overnight options.

Market Maker Obligations

The introduction of a MM in 3 Year Commonwealth Treasury Bond Options was designed to enhance market quality through the provision of greater liquidity and reduction in trading costs. Amongst the major changes introduced with the introduction of a market maker include:

- The MM will provide continuous two-way quotes for option strikes with an Exchange delta between 0.05 and 0.5 inclusive. In addition, the MM is required to respond to a 'Request For Quote' (RFQ) that is outside the continuous quotation range.
- In the first and second serial and quarter months for the 3 CTB options the maximum quoted spread will be no greater than 4 ticks (2bp). The minimum volume per side will be no less than 200 lots.
- The MM will maintain continuous quotes and respond to RFQ's for a minimum of 75% of the time during the day-time trading session.
- RFQ's must be responded to within sixty seconds from when the message is received and must be available for at least thirty seconds.
- The MM must also provide a two-way price on SYCOM® for custom market strategies.

The effect of these mandatory changes will be examined below so to assess the overall impact of these changes on market participants.

2 SEC speech: Remarks Before the Securities Industry Association Market Structure Conference: By Commissioner Annette L. Nazareth

3 10 Year Commonwealth Treasury Bonds (CTB) are not examined in this paper as they are too thinly traded and estimates of the costs of trading are too noisy to draw any practical and reliable estimations.

4 Market-maker obligations were also introduced in the 10Yr CTB options six months later on 16 August 2005.

5 Data is obtained from SFE and Reuters databases covering outright options. Multi-legged option strategies are excluded on the basis that there is no means of effectively quantifying the appropriate strategies.

Cost of Trading

We examine the on-market cost of trading before and after the introduction of the designated market amaker. The cost of trading is measured as the difference between the best prevailing bid and offer prices.[6] Consistent with academic studies in derivative markets, analysis is confined to daytime trading.[7] Additionally, longer term options are excluded based on the fact that they are thinly traded, thus making any inferences difficult.[8] The final sample consists of 984 trades in the pre-market maker period and 1204 trades in the post-market maker period. Figure 1 illustrates the daily average bid-ask spread across option series during the sample period.

Figure 1
Daily Average Bid Ask Spread for 3 Year CTB Options.
(Pre): November 16, 2003 - February 15, 2005 (Post) February 16, 2005 - January 6, 2006
Source: Reuters

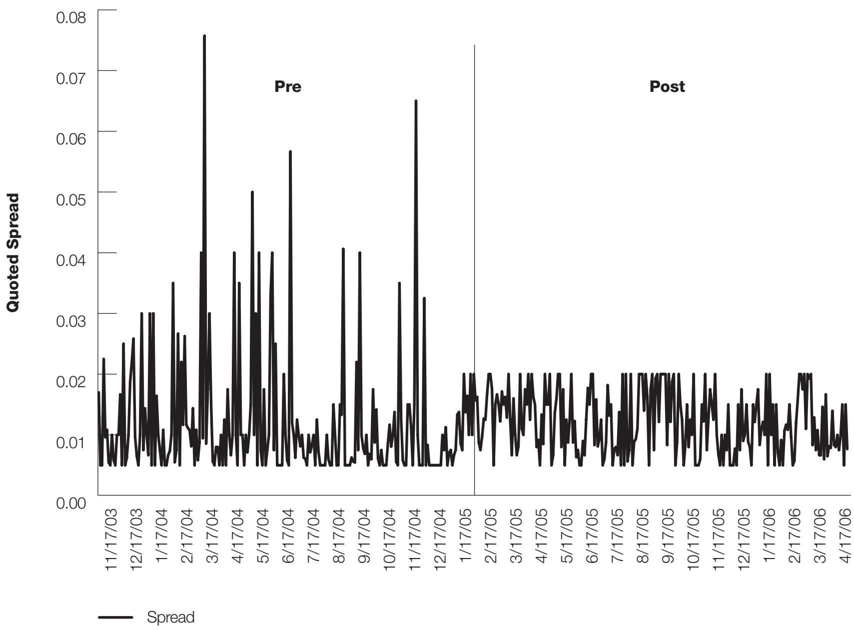


Figure 1 indicates that average quoted spreads in the post-market maker period exhibit less volatility, with quoted spreads not exceeding two basis points. This narrow band corresponds with the requirements of the market maker (as documented above) and provides support for the premise that a market maker provides greater execution certainty at lower average trading costs.

6 Quoted rather than percentage spreads are used in this analysis as the variation in percentage spreads does not allow for a constructive analysis.

7 See Frino A, Hill A, Jarnecic E and Aitken M (2004) 'The impact of electronic trading on bid-ask spreads: Evidence from futures markets in Hong Kong, London and Sydney', Journal of Futures Markets, vol.24, No.7

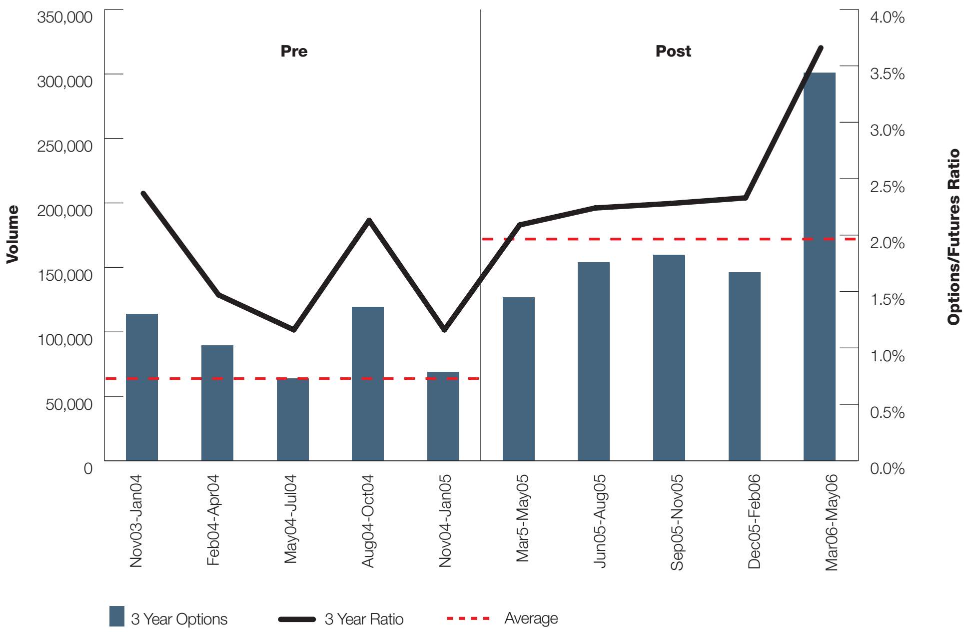
8 See for example - De Fontnouvelle P, Fishe R, and Harris J (2003) 'The Behaviour of Bid-Ask Spreads and Volume in Options Markets during the Competition for Listings in 1999' Journal of Finance, Vol 58, No.6

Trading Activity

Figure 2 depicts average quarterly trading volume in 3 Year CTB Options in the period preceding and following the introduction of the designated market maker. Figure 2 illustrates that in the period following the introduction of a market maker there is a clear upward trend formation, indicative of an increase in trading volume. The average quarterly number of contracts traded in the post period is 177,406 representing a 95% increase relative to the pre-market maker period.

Figure 2, additionally illustrates the average quarterly trading volume of 3 Year CTB options contracts relative to their underlying futures position. The increase in option trading volume relative to their underlying futures trading volume indicates the growing use of options contracts since the inception of the market maker.

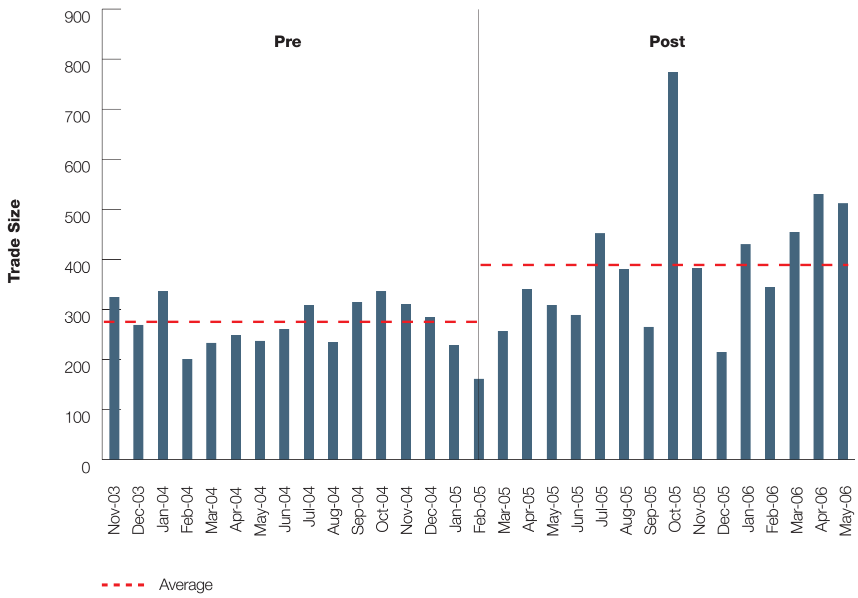
Figure 2
Average Quarterly Trading Volume for 3 Year CTB Options
(Pre): November 2003 – January 2005 (Post): February 2005 – May 2006
Source: Reuters



Trading Depth

We examine the effect on trading depth following the introduction of the designated market maker by assessing the average monthly trade size before and after the event. Average monthly trade size is used as a proxy for market depth. Figure 3 illustrates that average trade size rises from 275 contracts per month to 395 contracts per month representing a 44% increase on the previous period. The increase in trade size provides evidence that market depth increases following the introduction of the market maker.

Figure 3
Average Monthly Trade Size for 3 Year CTB Options
(Pre): November 2003 – January 2005 (Post): February 2005 – May 2006
Source: Reuters



Conclusion

This paper provides evidence consistent with an improvement in market quality since the introduction of a market maker. The evidence provided indicates that the market maker structure provides greater certainty of execution as a result of the decrease in volatility of the bid-ask spread, more competitive price quotes, and greater market depth.

9 The use of average trade size as a proxy for market depth is consistent with Grossman and Miller (1988), "Liquidity and Market Structure" – Journal of Finance. Intuitively we expect that if the market maker provides greater depth to the market then this would be reflected in greater average trade size.

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