ASX 3 and 10 Year Treasury Bond Futures Quarterly Roll

Summary of Comments

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Background information

Introduction

ASX's 3 and 10 Year Treasury Bond Futures contracts are benchmark futures contracts characterised by strong liquidity and turnover. Both the 3 and 10 Year contracts are among the top 10 most traded bond futures contracts in the world in terms of volume, and attract a diverse range of domestic and international customers, including real money accounts, institutional banks and proprietary firms.

Trading during the life of a contract occurs in the spot month only, up until two weeks prior to expiry. The quarterly expiry period culminates in the five day roll process with customers trading out of the spot month and establishing positions in the next contract. Historically most positions are rolled into the next contract month rather than taken to cash settlement. Because of this the quarterly roll is an important period for both end customers and intermediaries. With this concentration of activity in the five-day period, the quarterly roll attracts arbitrageurs and proprietary traders who contribute liquidity to the roll market to facilitate position transfer.

Under the existing price-time priority order matching algorithm, gaining good position in the queue has always been an important aspect of the roll market, particularly at times where there is relatively little volatility in the price of the roll. In a static roll price environment entering an order on the market open becomes increasingly important to ensure a higher probability of executing a trade without having to cross the bid-offer spread. Under these circumstances, there is the potential for order proliferation to occur as market participants seek to gain queue position.

ASIC has provided guidance in their Market Supervision Update to market participants on their obligations regarding appropriate risk management and entering multiple orders to gain favourable queue position.

International comparisons

In preparing the consultation paper, ASX undertook analysis of a number of international exchanges and the market structure of their respective bond futures markets. ASX investigated the application of block trade facilities, matching algorithms, implied pricing, interaction between outright and implied markets, and minimum price increments.

The exchanges analysed included CBOT, Eurex, Korea Exchange, Montreal Exchange, NYSE Liffe, NYSE Liffe US and the Tokyo Stock Exchange.

The analysis indicated that there were some similarities across exchanges:

- All these exchanges use a 'First In, First Out' (FIFO) matching algorithm for bond futures, with the exception of CBOT's 2 and 3 Year Treasury Notes, which are matched on a FIFO/ pro-rata hybrid algorithm.

- All these exchanges provide a block trade facility, some with restrictions around days out from expiry (NYSE Liffe and NYSE Liffe US) or prohibition on calendar spreads (CBOT). Other exchanges, such as Eurex and Montreal, have no restrictions on block trading calendar spreads.

In terms of tick size and associated dollar value, all these exchanges have contracts with minimum price increments of a smaller dollar value than for ASX. Most exchanges provide implied pricing and integration between the outright and spread markets.

It should be noted that offshore exchange bond futures contracts differ from the ASX offering in two significant areas: (1) all other exchanges trade bond futures on a capital price basis rather than yield. This offers more tradeable price points than the equivalent moves in yield; and (2) offshore bond futures are deliverable with the exception being the Korean bond futures contracts which are cash settled.

Respondents

Seventeen written responses were received with ten of those from ASX 24 Participants who also incorporated feedback from their customers. Of the seven other respondents, two were received from bank customers, primarily providing feedback from bond market makers; three were received from ASX 24 Principal Trading Participants and a further two were from industry bodies. ASX also contacted a range of participants and clients directly to canvass their views via face to face meetings and telephone based discussions.

Summary of Findings

The following provides a summary of the feedback received and gives some insight into the thoughts of market participants on the various proposals. The proposals outlined in the original discussion paper are listed in Appendix A of this document.

Pro-rata Matching Algorithm

Most respondents were against implementing a pro-rata order matching algorithm.

The majority of respondents believe that a pro-rata order matching algorithm would result in no material improvement in order proliferation relating to the bond roll process. Many of these respondents believed that a pro-rata system will significantly increase the level of proliferation as clients seek larger limits and place larger orders to ensure greater likelihood of obtaining fills. Such an outcome was also seen as creating the potential for erroneous order flow.

Pro-rata matching was also seen by some respondents as being operationally cumbersome for them due to an increase in order confirmation messages which would require an increase in broker system capacity. Increased capacity pressure could also be placed on middle and back office resources as more "smaller trades are allocated amongst many clients of clearing participants." This would likely result in an increase in the level of technology investment required by all market participants as users sought to respond to the specific elements of the pro-rata system.

A broad range of respondents believe that a pro-rata matching algorithm "would not add to liquidity, transparency or fairer fills in the market."

One respondent noted that it was "against this as the exchange would be fundamentally changing its matching algorithm, requiring substantial technical investment, and yet order proliferation would almost certainly still occur."

Respondents that were supportive of this initiative felt that a pro-rata matching algorithm would provide a more equitable allocation of trades to their clients. In general, these respondents highlighted the following advantages:

- A fairer allocation of trades relative to order size;

- Reduced effort and cost compared to needing to actively seek queue position;

- Avoiding the need to aggregate orders, therefore mitigating error risk;

- Ability to straight through process orders as they will be entered under a specific account and will require "less work for back offices splitting trades as compared with grouped orders traded under an omnibus account"; and

- Improvement in transparency given that client specific orders are directly entered and can be tracked more easily.

- Those in favour of adopting a pro-rata matching algorithm also suggested that combining pro-rata functionality with time priority and GTC orders could be effective in reducing order proliferation.

'Good till Cancelled' (GTC) Spread Orders

Most respondents were in favour of permitting GTC orders in the calendar spreads.

The major advantages of GTC orders were seen as:

- Reducing the need for users to seek queue position through the roll period;

- Reducing the likelihood of erroneous orders as users would in many cases need to enter fewer orders through the roll period;

- GTC orders were not expected to detract from liquidity in the roll as both clients and liquidity providers will place genuine orders earlier in the roll period thus providing liquidity providers with ongoing trading opportunities.

Hybrid options for GTC orders were also suggested such as enabling GTC orders combined with either a reduction in the minimum price increment for the 10 year rolls, or alongside the introduction of block trades or the application of some type of pro-rata mechanism as part of the GTC order functionality.

Respondents not in favour of GTC order functionality for the roll saw this functionality as simply encouraging earlier order proliferation if the existing order queue system was retained. There was concern that order build up would occur with the listing of the next trading month. Another concern raised was the potential impact that a GTC order structure could have on the stability of roll pricing. Some respondents felt that the convexity impact from overnight market price changes could affect the roll price fair value and consequently create a need to amend/cancel/re-enter orders on the market open. This outcome would negate the benefits associated with GTC orders.

Block Trades

There was an even split in responses in favour of and against block trades.

Those respondents in favour of block trades indicated the following advantages:

- Block trades would assist end users with large positions to roll their positions into the far contract at lower costs (with less price slippage);

- Large positions could be rolled earlier in the roll period.

Some respondents in favour of block trade functionality noted that if such functionality were implemented there would need to be a sufficiently high block trade volume threshold to ensure that block transactions did not detract from liquidity in the central order book. Some respondents were also in favour of an ability to transact block trades at the mid-point of market prices. Respondents also generally noted that block trades were used successfully for outright contracts in a number of international exchanges and provided cost savings and efficiency for underlying clients.

Those respondents against block trade functionality noted the following disadvantages:

- A reduction in the liquidity in the central order book

- Lower liquidity could potentially lead to greater volatility in the roll price

- Less timely transparency of roll activity

Respondents that were against the introduction of block trade functionality were concerned primarily at the risk to the market structure from the fragmentation of liquidity and felt that reducing the costs of the roll could be achieved through other means such as reducing the minimum tick increment. One respondent noted that "it will change the dynamics of the market by fragmenting the rolls into two separate and distinct markets."

Centre-Point Block

Most respondents were against Centre-Point block functionality.

A number of respondents that were not in favour of centre-point functionality were concerned at the general impact that block trade functionality would have on liquidity providers and liquidity fragmentation. Respondents were generally concerned about the complexity of this functionality and whether it could be applied to the bond roll market effectively. Off market block trade functionality was seen as a more feasible alternative.

Those respondents in favour of a centre-point block functionality felt that it would be a useful way of allowing block trading to occur while still maintaining a high degree of timely market transparency and providing open access to the block market for brokers and liquidity providers. One respondent suggested it should be considered with a return to full tick price increments in the 3 year bond contract over the roll period as this would enhance the level of liquidity in the 3 year bond roll market.

A number of responses indicated a high degree of uncertainty about how centre-point block functionality would work in practice. This suggests that should this option be explored further, it would be beneficial for ASX to provide more detail on how it might structure such functionality to resolve some of the concerns raised about liquidity fragmentation and the complexity of such a solution.

Quarter tick in 10 Year Bond Futures

Most respondents were against a reduction in the 10 Year bond futures minimum tick increment.

The primary concern of respondents that were against this option was the potential reduction it would create in participation in the market by liquidity providers. These respondents generally thought that liquidity providers would scale down or stop participating in the 10 Year bond futures roll given the greater risk they faced in providing liquidity and reduced profit opportunity from a smaller tick increment.

These respondents thought that a reduction in the tick size would result in a negative outcome for end users – rather than reducing the cost of crossing the spread for end customers, they could suffer "far higher slippage costs as a result." Some respondents believed that a smaller tick increment could exacerbate queue sizes as there would be less cost relating to unwinding trades from unexpected fills on orders. Concerns regarding technical change requirements on broker systems from a change to a lower tick increment were also highlighted.

Supporters of the reduction in tick size were of the view that it wouldn't "thin out" the active traders but they did acknowledge that the lower tick increment might need to be combined with either pro-rata or block trade functionality to mitigate the impact on liquidity. One respondent suggested that an alternate approach could be to only reduce the minimum tick increment for the roll market in the 10 year bond futures contract while leaving the outright market with a higher minimum tick increment of half a basis point. ASX notes that this would imply de-linking the outright and roll market to enable different minimum tick increments for the same futures contract.

Real Time Pre-trade Risk Management

Most respondents were in favour of implementing real time pre-trade risk management.

Respondents that were in favour of the exchange implementing some type of real time pre-trade risk management tool thought that it would significantly reduce the risk of high-frequency, high volume trading activity from distorting the roll market and therefore reduce the risk of erroneous trades. Some respondents also thought that an exchange based pre-trade risk management function would create a more level playing field for traders taking advantage of sponsored access

arrangements via their broker, rather than having such risk management functionality configured at the broking firm level. Respondents also thought that futures clearing brokers should have the ability to apply order quantity and net position limit controls for high frequency activity via the exchange functionality.

One respondent's comment was broadly representative of feedback on this option indicating that it "would fully support any exchange level account level controls."

Arguments against the implementation of pre-trade risk management functionality at the exchange rested on the technical issues that this would create in reconciling orders against limits and concern that this would create greater order latency.

Other Comments

In addition to comments on the ASX Proposals, respondents provided additional suggestions. These include:

- **De-linking the outright market from the roll market:** This would reduce potential system issues that arise due to the outright and roll markets intermingling through a legged roll market. The market would be able to "see the price where the roll trades and the volume traded, therefore allowing participants to ascertain VWAP and Open Interest rolled."

- **Random order numbers:** This would reduce the proliferation surrounding the attempt to gain queue position. The mechanics of this suggestion would involve a "computer generated random positioning of orders received pre-market and entered at any time in the pre-levelling period."

Next Steps

The ASX is looking to engage in further discussions with market participants regarding the above feedback prior to making any final decisions on roll market structure changes. This will occur in Q1 2013 with the objective of determining the initial changes (potentially a combination of changes) that can be implemented to enhance the roll market structure. ASX will be seeking further feedback on technical and practical operational aspects of some of the issues raised in submission. This will assist ASX in developing a final package of measures to enhance the roll market structure. Some changes may be able to be introduced relatively quickly, while others may require a longer implementation period. ASX anticipates providing the market with an update of changes by the end of Q1 2013. Further areas for discussion include:

- Defining the specific pre-trade risk management requirements of market users and how the exchange can support this.
- The GTC spread development together with any implications for pro rata order functionality and the re-setting or orders with roll price fair value changes.
- Discussing the delinking of the calendar spread and outright markets and how this may impact upon existing market dynamics.
- Discussing with market users the implications of permitting block trades during the roll and or block trades for roll purposes in the lead up to the expiry (except for the last five days of trade prior to expiry) and the potential of using centre-point block to resolve market fragmentation concerns.
- Discussing random order number generation and the impact on market management – e.g. audit issues, order and fill tracking and error cancellations.

ASX will also be liaising with ASIC on some of these issues. In its recent consultation paper *CP195: Proposed amendments to ASIC market integrity rules: ASX 24 and FEX markets,* ASIC noted that it would be taking into account the outcome of the current ASX consultation process before deciding whether to proceed with amendments to specific market integrity rules or to make further amendments to permit certain block trades as outlined in the ASX 24 consultation paper.

Appendix A: ASX market structure changes - concepts for discussion

Pro-rata matching algorithm

Proposal	Implement pro-rata matching algorithm for 3 and 10 Year Bond Futures calendar spread market.
Rationale	ASX currently employs a FIFO or price – time priority matching algorithm across all futures and option contracts during open trading. A significant implication of the FIFO structure is that an entity that enters orders early into the trade execution system will have priority in potentially obtaining a fill on that order at that price. Entities that are slower at entering orders will be queued behind the earlier orders (on the basis of time) and therefore have a lower probability of a fill at that price. Where there is relatively little volatility in the price of the roll, entering an order early becomes increasingly important to ensure a higher probability of executing a trade without having to cross the bid-offer spread. Under these circumstances, there is the potential for order proliferation to occur as market participants seek to gain queue position. Benefits of pro-rata: With a pro – rata matching algorithm, trade volume is allocated to all orders in the queue. The size of the fill allocated to an order is relative to the total order volume. Larger individual orders receive a larger portion of the transacted volume. In its purest form, all orders in the central order book, irrespective of the time an order is entered, receive a portion of volume from the incoming order. Variations on the pro-rata algorithm, such as top order priority, can be used to reward orders that improve the market. Drawbacks of pro-rata: A pro-rata matching algorithm may encourage traders to place multiple individual orders of a larger magnitude in order to gain faster fills. Queue sizes in terms of total volume available and length could also be significantly larger. Pro-rata matching algorithms, all other things being equal, are likely to result in a substantive increase in order confirmation messages, smaller individual fills per order, and an increase in middle and back office system traffic.
Considerations	1. The potential for a pro-rata matching algorithm to exacerbate larger queues in terms of total volume and number of orders. 2. The downstream impact on middle and back office systems resulting from a substantive increase in messages and trade registration. 3. Introduction of a pro-rata matching algorithm would require development of ASX Trade24 functionality. Capacity testing of ASX Trade24, Secur, and vendor systems would be required and may result in the need to develop systems to cope with the increased traffic.

GTC spread orders

Proposal	Permit GTC orders for calendar spreads
Rationale	Current ASX Trade24 functionality permits GTC orders in outright markets. GTC orders cannot be placed in the spread markets. Under existing functionality, roll orders are automatically purged at the end of each trading session. Unfilled and partially filled client orders must be re-entered at the start of each trading session. The GTC order type allows customer orders to remain in the ASX Trade24 order book over multiple trading sessions. Benefits of GTC orders: Permitting GTC spread orders may reduce the order entry activity at the start of each trading session. Drawbacks of GTC orders: Conversely, a GTC spread order type is likely to encourage an earlier buildup of the roll queue, particularly during periods where the roll price is expected to remain stable. The introduction of GTC spreads may not reduce the degree of order proliferation but may result in it occurring at a single point in time and earlier than currently seen. GTC spreads may also increase the risk of erroneous trades should the fair value of the roll change.
Considerations	1. GTC spread order type may reward customers entering roll orders earlier. 2. The potential for order proliferation is likely to remain, occurring earlier in the contracts life cycle. 3. The potential for order entry errors to occur may reduce but the risk of trades occurring away from fair value may increase. 4. The introduction of GTC spread order type would require development of ASX Trade24 functionality.

Block Trade spread orders during the roll

Proposal	Permit Block Trades for calendar spreads in the five business days leading up to expiry
Rationale	Block Trade rules apply to both the 3 and 10 Year Treasury Bond Futures contracts. Block Trades are only permitted during the night trading session reflecting lower levels of participation and liquidity in that session relative to the day trading session. Block trades (night session) in the spot month contract are currently not permitted for the five business days prior to the Last Trading Day. The Block Trade Facility allow brokers to match large customer orders, providing greater certainty of a total order fill with reduced price slippage. Block trades may also reduce the price impact of a relatively large order on the central order book. Block Trades are arranged and executed off-market, reported to ASX and registered with ASX Clear (Futures). Block Trades do not affect open/high/low/close/volume information in the ASX Trade24 market. However, Block Trade volumes are included in all exchange market data reporting. Block Trades are typically reported to the market on a delayed basis. Benefits of Block Trades: Permitting Block Trades for roll business facilitates efficient movement of large positions into the

	new contract month. Customers are able to determine when positions are rolled, minimising price slippage and time spent managing the roll process. Drawbacks of Block Trades: Block Trade functionality applied in a liquid market environment is likely to fragment the market, potentially creating one market for large customers and their facilitating brokers, and another for smaller customers and their brokers. There could be an overall decline in liquidity provision into the central order book and the market is likely to become less transparent and less timely with information flow. Should block trading be allowed, a key consideration is setting an appropriate minimum volume threshold. Setting the threshold too low may have a negative impact on the liquidity and bid offer spread in the central order book. For customers rolling smaller positions and traders of the roll, taking too large a slice of the roll business out of the central order book may cause bid offer spreads to widen and the overall cost of rolling positions would increase.
Considerations	1. A Block Trade Facility for roll business will reduce market transparency. 2. Delayed reporting of rolls conducted through the block trade facility could create asymmetric information dissemination at a crucial time for all market participants. 3. If Block Trades were permitted during the roll period setting the appropriate minimum volume threshold is a key factor to maintaining liquidity in the central order book. 4. Block Trade for roll requires no system development.

Centre Point Order type

Proposal	**Introduce a Centre Point Block order type**
Rationale	ASX introduced Centre Point Block order type in June 2012 on ASX Trade. Centre Point Block provides a centralised matching facility on the trading platform, which is accessible by all market participants including liquidity providers. Centre Point Block order type allows market participants to place and match volume contingent orders. An order is placed for the total amount to be traded as well as the Minimum Acceptable Quantity (MAQ). The block trade will not occur until an opposing order at the specified price that meets the MAQ level or higher is placed into the system. Once an order has been partially filled, it remains in the order book, with the assigned MAQ level in place. The order will not trade until another opposing order is entered that meets the MAQ volume level. Centre Point order trades can only occur at the midpoint of the best bid and offer in the central order book. Benefits of Centre Point Block: Centre Point order functionality allows large volume orders to occur in a more transparent manner than standard block trade functionality – traded volume and price is visible to the entire market. In addition, there is open access to such orders for all brokers and their underlying clients so fragmentation of the market should be moderated. Drawbacks of Centre Point Block: For both the 3 and 10 Year Treasury Bond Futures contracts, both the roll and outright markets trade at the minimum tick increment. To support a Centre Point Block order type, the minimum price increment would need to be narrower than that traded in the central limit order book.

Considerations	1. A Centre Point Block order type provides an alternative to broker sponsored block markets.
	2. Centre Point Block order type allows market participants to control their fill size.
	3. All market participants can partake in the Centre Point order facility.
	4. If Centre Point Block order type was introduced setting the appropriate minimum volume threshold would be a key factor.
	5. To facilitate trading at the midpoint, the tick increment for Centre Point Block orders would need to be narrower than allowed in the calendar spread market. This has implications for downstream reporting and position management.

Quarter the tick size in the 10 Year Bond Futures contract

Proposal	Introduce quarter tick sizes for the 10 Year Bond Futures contract during the roll period
Rationale	A smaller tick size increment for the 10 Year Bond Futures contract (currently approximately A$40) would reduce the cost associated with rolling positions.
	Benefits of a reduced tick size:
	The introduction of a quarter tick increment would reduce this cost to approximately A$20. The lower cost of crossing the spread, may reduce the number of orders in the queue and encourage hedgers to cross the spread more often.
	Drawbacks of a reduced tick size:
	A smaller tick value does remove some of the attraction of trading the 10 Year Treasury Bond roll on the part of liquidity providers. This could result in less liquidity in the roll market and wider bid-offer spreads.
Considerations	1. Halving the cost of crossing the spread may reduce the incentive to queue orders and encourage customers to cross the spread.
	2. The tick value for a quarter tick increment may disenfranchise liquidity providers in the 10 Year Bond roll.
	3. Introducing a quarter tick increment would require significant operational effort to implement and may require system development.

Improve real time pre-trade risk management

Proposal	Provide real time pre-trade risk management tools to ASX 24 Clearing Participants
Rationale	ASX provides pre-trade order limit management at the ASX 24 gateway level. This limit allows Clearing Participants to define the volume that can be submitted per order through the specified gateway. The default limit level is 9,999 lots.
	During the roll period, customers can potentially place multiple orders with a number of brokers in an attempt to gain favourable queue position but still seek to clear through one Clearing Participant. In such a situation, the Clearing Participant is unable to identify the potential exposure a customer has to open orders in the market. The degree of order proliferation in the roll market may be reduced if Clearing Participants are better able to monitor client order activity on a real time basis.

	Benefits of real-time risk management tool:
	Real-time risk management tools can provide Clearing Participants with the ability to preset trading limits at a customer level. Irrespective of the broker through which the orders are placed, a pre-trade risk control system checks the order against preset limits before sending the order to the trading engine.
	Drawbacks of a real-time risk management tool:
	ASX does not perceive any drawbacks with the introduction of a pre-trade risk management tool.
Considerations	1. Real-time risk management systems allow Clearing Participants to ensure clients are not placing orders beyond agreed levels. 2. Pre-trade risk controls would ensure clients are not placing orders in the roll market that they cannot fund.