

MARKET INSIGHTS

Managing exposure to the Australian equities market:
The relative cost of taking positions in the ASX SPI 200™
Index futures and the SPDR® S&P/ASX 200 Fund



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Managing exposure to the Australian equities market: The relative cost of taking positions in the ASX SPI 200™ Index futures and the SPDR® S&P/ASX 200 Fund

Dr Andrew Lepone and Anthony Flint

EXECUTIVE SUMMARY

Alternatives available to fund managers for investing in the *S&P/ASX 200* accumulation index include investing in an exchange-traded fund (ETF) that seeks to closely match the returns of the index or applying a futures overlay. Equity index futures are often used to obtain synthetic exposure to the Australian equities market or hedge a position in an index portfolio. If the synthetic exposure or hedge is held across an expiration date, the position in futures contracts needs to be ‘rolled over’ by closing out the position in the nearest-to-expiry contract and opening up a new position in the second nearest-to-expiry contract. This paper examines the level of trading activity and liquidity (measured by bid-ask spreads and depth) in these two instruments available for obtaining exposure to the Australian equities market. To examine the difference in implicit transactions costs when trading these alternative instruments, the slippage costs involved in executing an order are compared. The paper also examines trends in trading activity associated with rolling over a position in ASX SPI 200™ Index Futures between the alternative instruments and the associated interaction with futures rollover activity.

The key findings of this study are –

- Near ASX SPI 200™ futures experienced growth of 4.7 percent over the four years to 2010. In contrast, the volume traded in the SPDR S&P/ASX 200 Fund has witnessed significant growth in trading volume of 270.7 percent over this time period.
- The bid-ask spreads for near and deferred ASX SPI 200™ futures are reasonably stable over the four period, averaging 0.03 percent as of the June quarter of 2010. Bid-ask spreads for the SPDR S&P/ASX 200 Fund have narrowed considerably in recent years, slightly above bid-ask spreads reported for SPI futures at 0.05 percent as of the June quarter. Depth in the index fund has also increased considerably over this time period.
- Slippage costs for executing an order are higher on the SPDR S&P/ASX 200 Fund than for near and deferred ASX SPI 200™ futures. However, execution costs for this cash instrument have fallen considerably in recent years.
- Trading activity in the near ASX SPI 200™ futures begins to decline 5 days before expiry. Trading in the deferred ASX SPI 200™ futures however gathers momentum from 8 trading days before the expiration of the near contract. Trading activity in the cash market alternatives is not responsive to the futures expiration cycle.

1. Introduction

Cash equitisation is the process which involves using either index futures or exchange-traded funds (ETF's) to achieve rapid exposure to index returns at low cost. In Australia, cash equitisation by fund managers can be implemented using two popular alternatives – (i) by investing in the SPDR S&P/ASX 200 fund that seeks to closely match the returns of the index, or (ii) applying a futures overlay using the ASX SPI 200™ futures. This paper examines the level of trading activity in the alternative methods available for obtaining exposure to the Australian equities market and the relative transactions costs (measured by bid-ask spreads and depth) and execution costs of taking positions in the alternative instruments.

Index replication strategies involving futures need to be implemented within the confines of an expiration schedule. Equity index futures are often used to obtain synthetic exposure to the Australian equities market or hedge a position in an index portfolio. If the synthetic exposure or hedge is held across an expiration date, the position in futures contracts needs to be 'rolled over' by closing out the position in the nearest-to-expiry contract (referred to as the 'near' contract) and opening up a new position in the next nearest-to-expiry contract (the 'deferred' contract). The paper therefore examines trends in trading activity associated with rolling over a position in ASX SPI 200™ Index Futures between the alternative instruments and the associated interaction with futures rollover activity.

The two instruments we examine are *ASX SPI 200™ Index Futures* and the *SPDR S&P/ASX 200 Fund*¹. A brief description of each instrument is provided in the appendix.

2. Trading Activity in the alternative instruments

The size of the bid-ask spread and slippage costs incurred in taking positions in futures are negatively related to the level of trading activity in the market². When transactions costs in either futures or cash markets are high, market participants search for alternative instruments with lower transactions costs, leading to a shift in trading volume from one instrument to another. We compare the trading volume and turnover (value traded) of the three instruments to assess the transactions costs of trading the alternative instruments in light of the intensity of trading activity across their respective markets. The trading activity figures reported in this section indicate the level of demand to trade each instrument, given the relative transactions costs and quality of market index exposure provided by each instrument. In the next section, we proceed to demonstrate the levels of liquidity that sustain this trading activity.

As shown in Panel A, the near ASX SPI 200™ futures experienced 4.7 percent growth in trading volume from the September quarter of 2007 to the June quarter of 2010. Total trading volume in the deferred contract however declined 22.4 percent over the same period. The SPDR S&P/ASX 200 Fund has seen substantial growth in traded volume, increasing 230.9 percent over this time period as seen in Panel C. The change in turnover for the near and deferred SFE SPI 200™ futures was -21.2 percent and -44.9 percent respectively, with turnover in the index fund growing 237.9 percent over the period.

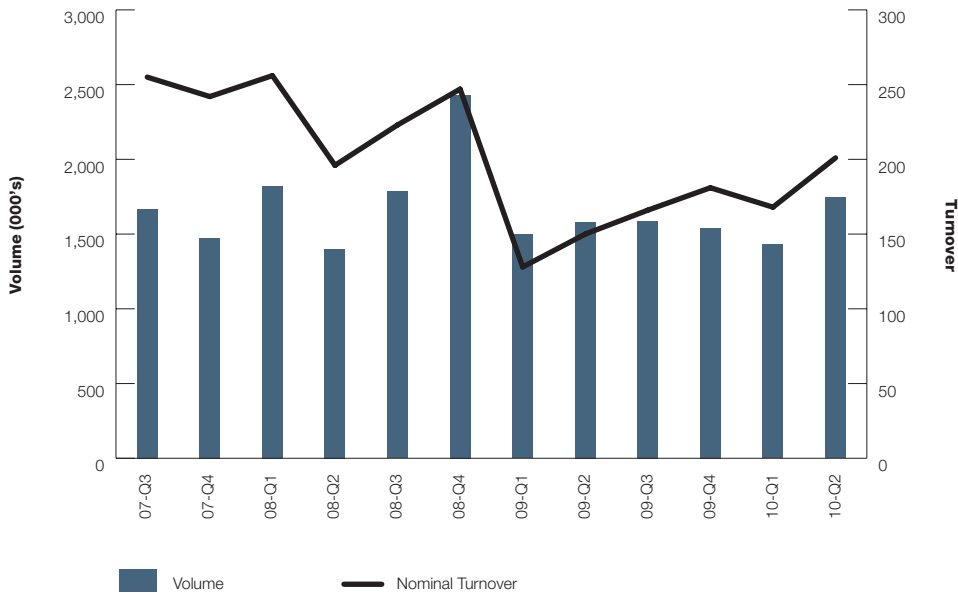
Though there has been substantial growth in traded volume and turnover in the SPDR S&P/ASX 200 Fund, the level of turnover is substantially smaller relative to both the near and deferred ASX SPI 200™ futures. As of the June quarter of 2010, traded volume totaled 18 million contracts with turnover value at \$1 billion. In contrast, traded volume for the nearest SPI futures totaled 1.74 million contracts with a value of \$201 billion. For the deferred SPI futures, turnover totaled \$5 billion.

1 We are grateful to the Securities Industry Research Centre of Asia-Pacific (SIRCA) for providing Reuters intra-day quote data and programming assistance.

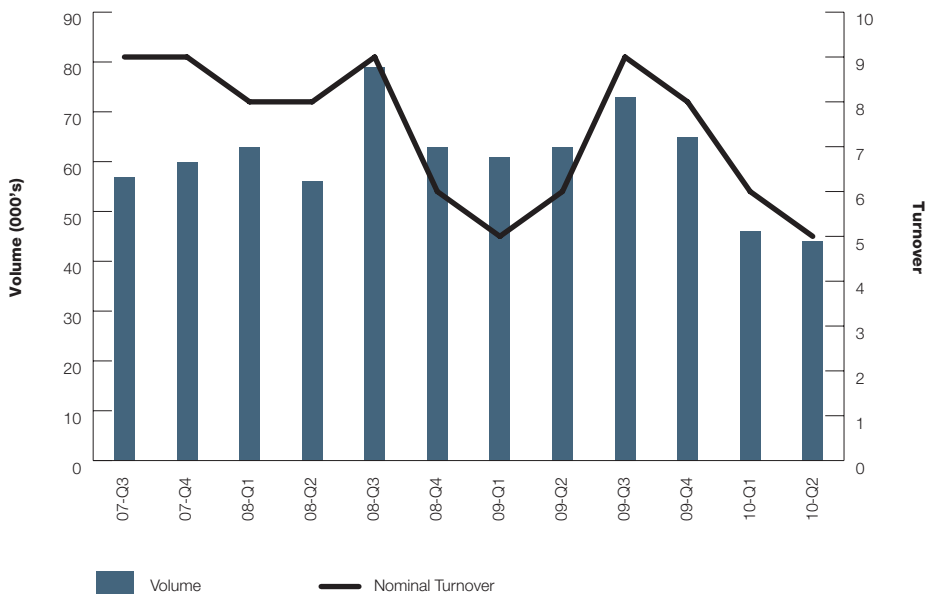
2 For example, Wang G.H.K., Yau, J. and Baptiste, T. (1998), 'Trading volume and transactions costs in futures markets', *Journal of Futures Markets*, 17 (7), 757-80 report that the elasticity of trading volume with respect to transaction costs for S&P 500 index futures traded on the Chicago Mercantile Exchange is -2.03. That is, their results suggest that the trading volume of S&P 500 index futures will decrease by 2.03 percent in response to a 1 percent increase in transaction costs.

Figure 1
 TRADING ACTIVITY IN SYNTHETIC AND CASH INSTRUMENTS PROVIDING EXPOSURE TO
 THE AUSTRALIAN EQUITIES MARKET

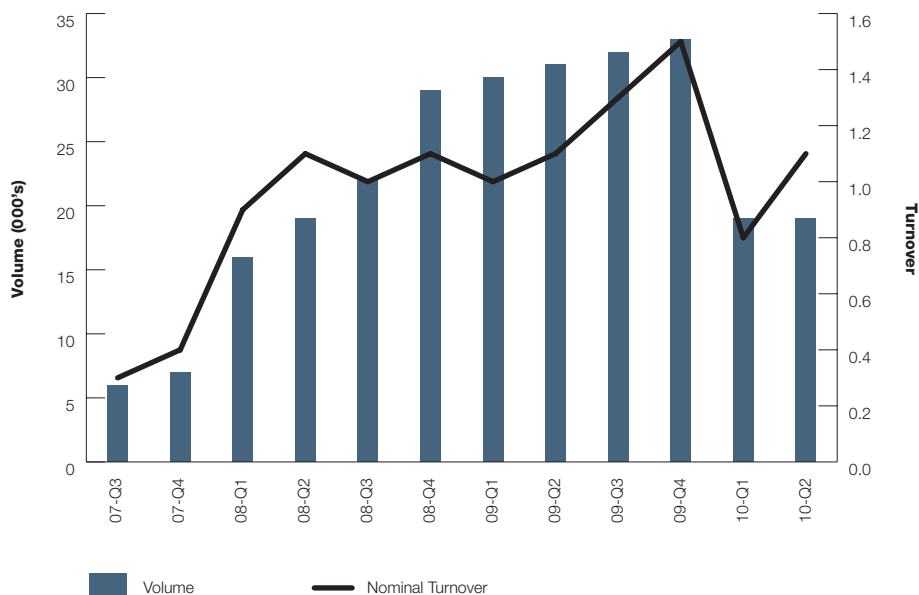
Panel A: Nearest expiry SPI 200 Index Futures



Panel B: Second nearest expiry SPI 200 Index Futures



Panel C: SPDR S&P/ASX 200 Fund



3. Liquidity of the alternative instruments.

It is crucial for global institutions to consider transactions costs when comparing the opportunities offered by the alternative instruments for obtaining Australian equities market exposure³. The bid-ask spread represents the minimum cost of trading each instrument and sufficient depth at the best quotes allows investors to trade large quantities with minimal price impact. Wide spreads and low depth erode institutional profits from trading strategies⁴. To compare transactions costs across the alternative instruments, we report the bid-ask spread and depth at the best bid and ask prices.

The bid-ask spread measures the round-trip cost of a transaction. To assess the extent to which the alternative instruments are likely to present profitable trading opportunities to investors, we compare bid-ask spreads for ASX SPI 200™ futures and the SPDR S&P/ASX200 Fund. We report bid-ask spreads as a percentage of the dollar value exposed by opening a position in each instrument⁵.

3 Frino, A. and Gallagher, D.R. (2002), 'Is index performance achievable? An analysis of Australian equity index funds', *Abacus*, 38 (2), 200-14 find that the tracking error in passive fund performance is significantly related to the fund cash flows, the cost of trading stocks in the index portfolio, the volatility of the benchmark and the investment strategy used by the fund manager.

4 Bilson, C., Brailsford, T. and Evans, T. (2005), 'The international transmission of arbitrage information across futures markets', *Journal of Business Finance and Accounting*, 32 (5/6), 973-1000 demonstrate that arbitrage profits from exploiting stock index futures mispricing across futures markets disappear when taking account of transaction costs.

5 The percentage spread is calculated as [(ask price - bid price) ÷ midpoint price] x 100.

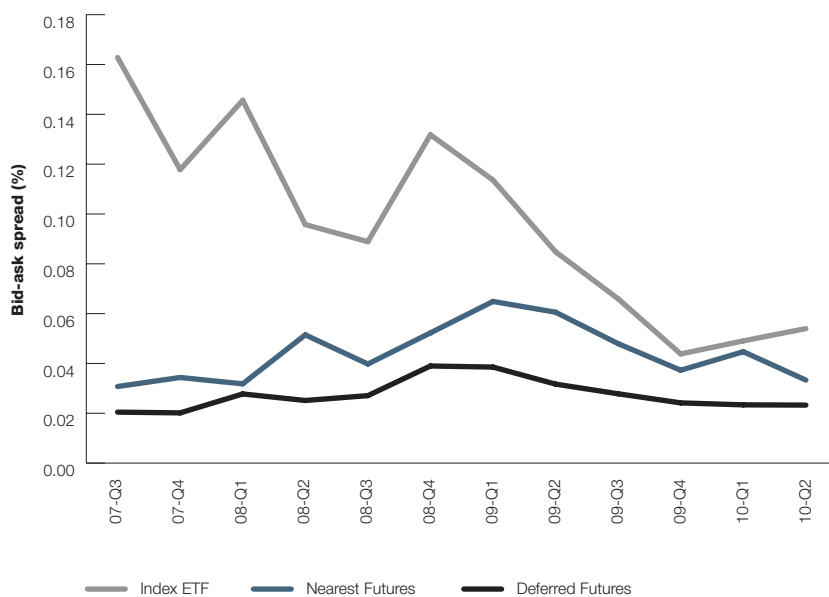
Figure 2 (Panel A) reports time-weighted average bid-ask spreads for all four instruments. The bid-ask spreads for near and deferred ASX SPI 200™ futures were fairly stable over the time period examined. Bid-ask spreads averaged 0.02 percent and 0.03 percent of contract value respectively for both the September 2007 quarter (the start of the time period examined) and the second quarter of 2010 (the end of the time period examined), respectively. Bid-ask spreads reached a peak of 0.04 percent of market value for near SPI futures and 0.06 percent of market value for deferred SPI futures during this period. There is a considerable narrowing of bid-ask spreads in the SPDR S&P/ASX200 Fund, declining 0.11 percent to 0.05 percent of market value in the June 2010 quarter. The improvement in bid-ask spreads follows a longer downward trend, with the May 2007 Market Insights reporting bid-ask spreads for the first half of 2006 at 0.25 percent⁶. These results reveal that investors in both futures and cash instruments face similar transaction costs for obtaining equity market exposure.

Depth provides an additional indicator of trading opportunities available to investors. To assess the extent the alternative instruments present profitable trading opportunities to investors, we examine average depth at both the best quotes and throughout the order book. We report depth in terms of the Australian dollar value of the aggregate quote size at the prices offered at each level in the order book to compare across markets⁷.

For the near and deferred ASX SPI 200™, best depth and total depth was quite volatile. For the near futures, best depth fell to \$0.7 million in the December 2008 quarter and averaged \$2.5 million as of June 2010. For the deferred futures, best depth fell to \$0.6 million in the March 2009 quarter and was \$2.0 million as of June 2010. Total depth for the June quarter 2010 quarter was \$19.2 million for the near futures contract and \$8.7 million for the deferred contract. Although the level of liquidity offered by the SPDR S&P/ASX200 Fund is less than both the near and deferred ASX SPI 200™ futures, depth at both the best quotes and throughout the order book has increased steadily. Best depth (total depth) increased from \$0.2 million (\$1.7 million) in the September 2007 quarter to \$0.7 million (\$6.6 million) in the June quarter 2010.

Figure 2
LIQUIDITY OF SYNTHETIC AND CASH INSTRUMENTS PROVIDING EXPOSURE TO THE AUSTRALIAN EQUITIES MARKET

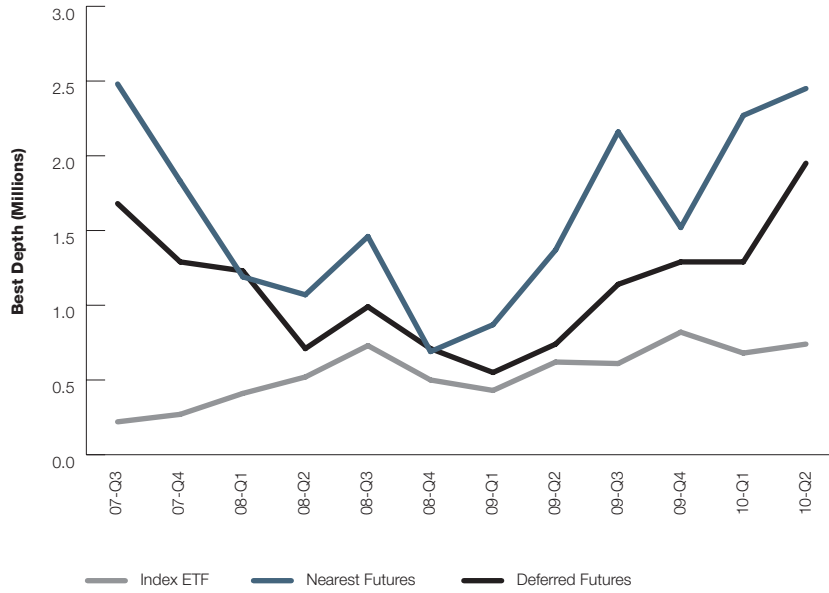
Panel A: Average bid-ask spreads of ASX SPI 200 index futures and the SPDR S&P/ASX 200 Fund



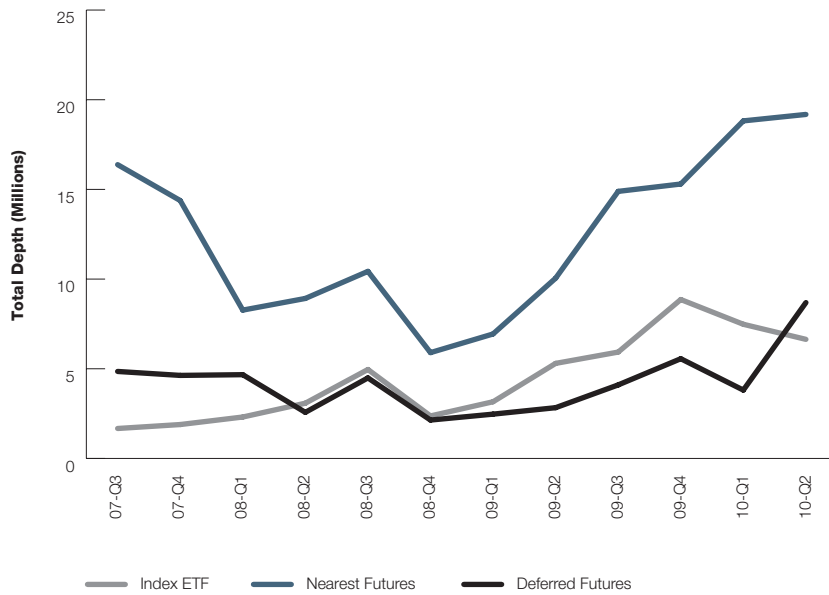
6 Cummings, J.R. and Frino, A. Managing exposure to the Australian equities market: The relative cost of taking positions in ASX SPI 200 index futures and cash market instruments. Market Insights, May 2007.

7 The depth in AUD is calculated as the average of the bid quote price in AUD x the bid quote size and the ask quote price in AUD x ask quote size.

Panel B: Average best depth of ASX SPI 200 index futures and the SPDR S&P/ASX 200 Fund



Panel C: Average total depth of ASX SPI 200 index futures and the SPDR S&P/ASX 200 Fund



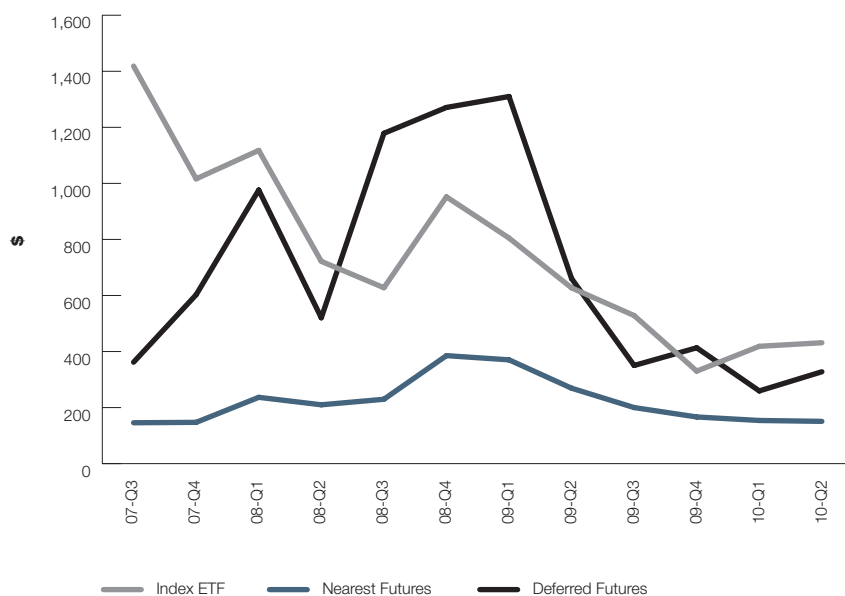
4. Transaction costs of trading in the alternative instruments

An important factor for investors is the level of transactions costs, due to its negative impact on the profitability of trading opportunities. To examine the difference in implicit transaction costs when trading these alternative instruments, we estimate the dollar value of slippage costs when executing an order of one million at a given point in time. Slippage is defined as the extent to which the execution of a large order adversely affects the price⁸.

Figure 4 reports slippage costs for all three instruments. For the near ASX SPI 200™ futures, the dollar transaction cost for executing an order of one million dollars remained fairly stable over the period. In the September quarter of 2007, the average cost was \$146. As of the June quarter of 2010, this had increased slightly to \$150 dollars. Transaction costs when trading the deferred ASX SPI 200™ futures were more volatile and expensive. Execution costs hit a high of \$1,310 in the March quarter of 2009, and were \$328 in the June quarter 2010.

As seen in Figure 3, there is a marked improvement in execution costs when trading the SPDR S&P/ASX200 Fund. Average slippage costs were \$1,418 in the September quarter of 2007 and \$423 in the June quarter of 2010, a decline of 71.4 percent. This reduction results from an increase in the funds liquidity, as demonstrated by the reduction in spreads, and the increase in depth, traded volume and turnover. Although the ASX SPI 200™ futures offers greater liquidity and thus reduced slippage when executing an order, the SPDR S&P/ASX200 Fund provides a viable alternative to investors wishing to gain exposure to the equity market.

Figure 3
SLIPPAGE COSTS INCURRED IN EXECUTING TRADES IN SYNTHETIC AND CASH INSTRUMENTS PROVIDING EXPOSURE TO THE AUSTRALIAN EQUITIES MARKET



8 To calculate the dollar value of slippage costs, we first convert quoted depth at each level in the order book into AUD values. Each level in the order book on the ask and bid side is weighted as a function of the million dollar transaction. At each level in the order book used to complete the transaction, we take the difference of the quoted price and the midpoint price [(ask price + bid price) ÷ midpoint price], representing slippage for both the ask side and the bid side. The slippage costs at each level are multiplied by the associated weighting and are added together. The dollar value of the slippage cost is calculated as the total slippage cost multiplied by the number of contracts multiplied by the price (price x AUD 25 for SPI futures) of each contract. The slippage costs for both the ask side and the bid side are then averaged.

5. Trading Activity in the alternative instruments approaching futures expiry

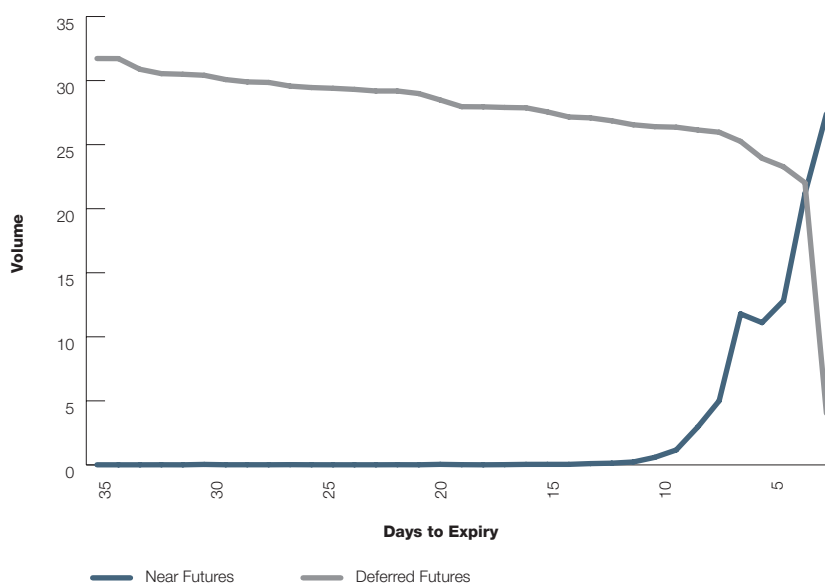
Figure 4 characterizes the trading activity in both the futures and cash markets associated with the rollover of open interest from near to deferred ASX SPI 200™ futures.

Panel A in Figure 4 illustrates the daily changes in traded volume in near and deferred ASX SPI futures leading up to the expiration of the near contract⁹. Traded volume for the near ASX SPI 200™ futures declines throughout the 35 days to expiry, decreasing substantially 5 trading days before expiry. Volume in the deferred contract begins to increase rapidly 8 days from expiry, showing futures rollover activity occurring near the end of the nearest contracts' expiry. The volume traded in the SPDR S&P/ASX200 Fund however, is sporadic over the futures expiration cycles. The period leading up to expiry exhibits no lasting increase in trading activity as seen in the deferred futures contracts. This suggests that trading in the cash market does not respond to the futures expiration cycle.

Figure 4

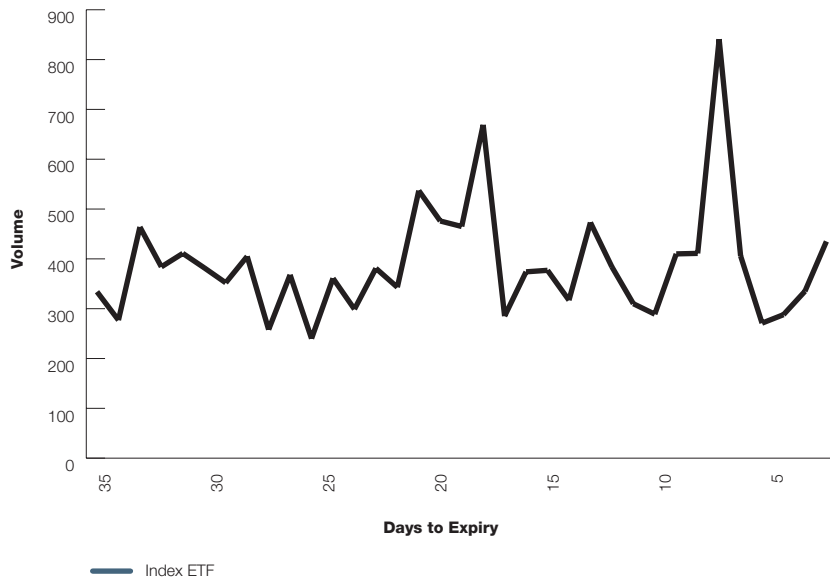
TIME-TO-FUTURES-EXPIRY PATTERNS IN THE DAILY TRADING ACTIVITY OF SYNTHETIC AND CASH INSTRUMENTS PROVIDING EXPOSURE TO THE AUSTRALIAN EQUITIES MARKET

Panel A: Volume traded of SPI 200 Index futures



9 For the quarterly ASX SPI 200™ contracts, the final settlement price (Special Opening Quotation) is calculated using the first traded price of each component stock in the S&P/ASX200 index on the last trading day being the third Thursday of the month (denoted day 0 in Figure 3). Trading in expiring contracts ceases at 12.00 p.m. on day 0.

Panel B: Volume traded of STW S&P/ASX 200 fund



6. Conclusion

The on-market trading dynamics of the SPDR S&P/ASX 200 Fund have increased significantly over the last four years. The SPDR S&P/ASX 200 Fund is now a viable alternative to the ASX SPI 200™ futures for Equity fund managers looking to achieve cash equitisation.

Furthermore, Equity Fund Managers who have mandate restrictions precluding them from using the ASX SPI 200™ futures can now utilise the SPDR S&P/ASX 200 Fund for cash equitisation and transition management.

APPENDIX 1

Synthetic and cash instruments providing exposure to the Australian equities market

ASX SPI 200™ Index Futures

ASX SPI 200 futures were launched on 2 May, 2000. They enable investors to trade movements in the S&P/ASX200 index in a single transaction, thereby allowing exposure to Australia's top 200 companies without having to buy or sell shares in every company in the index. In this paper we examine the March, June, September and December quarterly expiry months, where the last trading day is the third Thursday of the settlement month.

SPDR S&P/ASX 200 Fund

State Street Global Advisors' SPDR S&P/ASX200 Fund commenced trading on 27 August, 2001. It is an investment that contains a pool of securities representing the S&P/ASX200 index. The fund is listed on the ASX, and units in the fund can be traded on the ASX like any other quoted security.

APPENDIX 2

There are several features of the SPDR S&P/ASX200 fund that were not examined in this paper, but that could be analysed in future research. These features include –

- For investors holding the SPDR S&P/ASX200 fund on and around the two distribution dates (June and December), franking credits can be a source of added value. (Note that investors may need to satisfy the “45 day” rule as well as being Australian resident for tax purposes).
- While the SPDR S&P/ASX200 fund requires cash settlement for trades held overnight, the SPDR S&P/ASX200 fund can be lent, generating income to offset other costs incurred.
- Furthermore, the SPDR S&P/ASX200 fund is the only security outside of companies comprising the S&P/ASX 200 index that ASX Clearing Corporation’s subsidiary ASX Clear will accept as “General Collateral” lodgement against margining obligations in the ASX Exchange Traded Options market. This could lower a fund manager’s costs if active in the SPDR S&P/ASX200 and the ASX ETO market.
- The SPDR S&P/ASX200 is an open ended fund with primary market applications or redemptions being able to be executed at any time via CHESS. Over the twelve months to June 2010, the total dollar value for applications and redemptions totaled \$1.1 billion and \$264.2 million, respectively. This is important for cash equitisation strategies, particularly those involving mandate transitions, as it means liquidity is not limited by the best depth available in the order book. Slippage costs may therefore be less than suggested via the analysis of the order book.

Notes

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