MARKET QUALITY INDICATORS

ASX Equity and Index Futures

By Dr Andrew Lepone and Steve Lecce
of the University of Sydney, Australia

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in association with

ASX
AUSTRALIAN SECURITIES EXCHANGE

INTRODUCTION

Welcome to this edition of *Market Quality Indicators*.

Market Quality Indicators has been developed to:

- Provide a quantitative overview of the trading activity and market dynamics of ASX equities and equity index ETFs and futures; and
- Highlight the extent of trading opportunities available on ASX as well as provide insights into the associated transaction costs.

This report, prepared by Dr Andrew Lepone and Steven Lecce from the Discipline of Finance at the University of Sydney, should be of interest to both global and Australian institutions that employ a quantitative approach to trading.

I trust you will find these statistics useful in assessing the opportunities that ASX might present to your organisation. If you have further research topics you would like us to undertake, please contact me directly or your local account manager (contacts on back page).

Regards

Richard Murphy
General Manager, Equity Markets
ASX Limited

ASX
AUSTRALIAN SECURITIES EXCHANGE

THE COMPANY

As one of the world's top-10 listed exchange groups, measured by its market capitalisation, the ASX group was created through the merger of the Australian Stock Exchange and the Sydney Futures Exchange. The ASX group operates under the brand Australian Securities Exchange.

The Australian Securities Exchange spans the markets for corporate control, capital formation and price discovery and functions as an operator, supervisor, central counterparty clearer and payments system facilitator.

The diverse domestic and international customer base of the Australian Securities Exchange includes issuers of a variety of listed securities, corporates, investment banks, trading banks, fund managers, hedge funds, commodity trading advisers and proprietary and retail traders.

More information on ASX can be found on our website **www.asx.com.au**

ASX Equity and Index Futures

Andrew Lepone and Steve Lecce

EXECUTIVE SUMMARY

The purpose of this booklet is to provide up-to-date semi-annual statistics that enable global institutions to evaluate trading opportunities in ASX equities and index futures. These statistics are provided for the (i) underlying securities of the S&P/ASX 200 Index; (ii) SPDR S&P/ASX 200 (STW) exchange traded fund; and (iii) ASX SPI 200® Index Futures. The key findings for the calendar year ending December 31, 2009 are as follows:

(i) **There has been a significant improvement in the market quality of the S&P/ASX 200 Index underlying securities.**
During 2009, trading volume and day traded frequency in the underlying securities of the S&P/ASX 200 Index increased by 48% and 9%, respectively, from 2008 levels. The increased trading activity has been met by a 67% increase in the average market depth at the best five quotes. The average bid-ask spread decreased by 10%, which represents a 2.85 basis point decrease from 30.01 basis points in 2008 to 27.15 basis points in 2009. The price impact for the underlying securities of the S&P/ASX 200 Index was reduced across all trade sizes from 2008 to 2009.

(ii) **The S&P/ASX 200 (STW) is now an efficient way for investors to gain exposure to the Australian equities market.**
The SPDR S&P/ASX 200 (STW) is an exchange-traded fund (ETF) that offers exposure to the returns of the S&P/ASX 200 Index. From 2008 to 2009, the number of trades, volume transacted and dollar value increased by 50%, 45% and 23%, respectively. The increased trading activity in the SPDR S&P/ASX 200 was met by a 148% increase in average market value of depth at the best five quotes. Over the same period, the average bid-ask spread fell by 52% and price impact fell for all trade sizes by at least 45%. This reduction in transaction costs highlight that the SPDR S&P/ASX 200 provides an efficient way for investors to obtain exposure to the Australian equities market index.

(iii) **There has been an improvement in the quality of the *ASX SPI 200® Index Futures* market**
The average market depth at the best bid and best ask in the nearest expiry month contract increased in the December quarter 2009, compared to the same quarter of the previous year. The average bid-ask spread narrowed to 1.17 index points in the December quarter 2009, representing AUD29.30 or 2 one-hundredths of one percent of contract value. Daily return volatility on the nearest expiry month contract decreased from 6.66% index points in the December quarter 2009 relative to 2.62% in the December 2008 quarter. The average trade size during day sessions remained constant at approximately 2 lots in the December quarter 2009.

Study Methodology

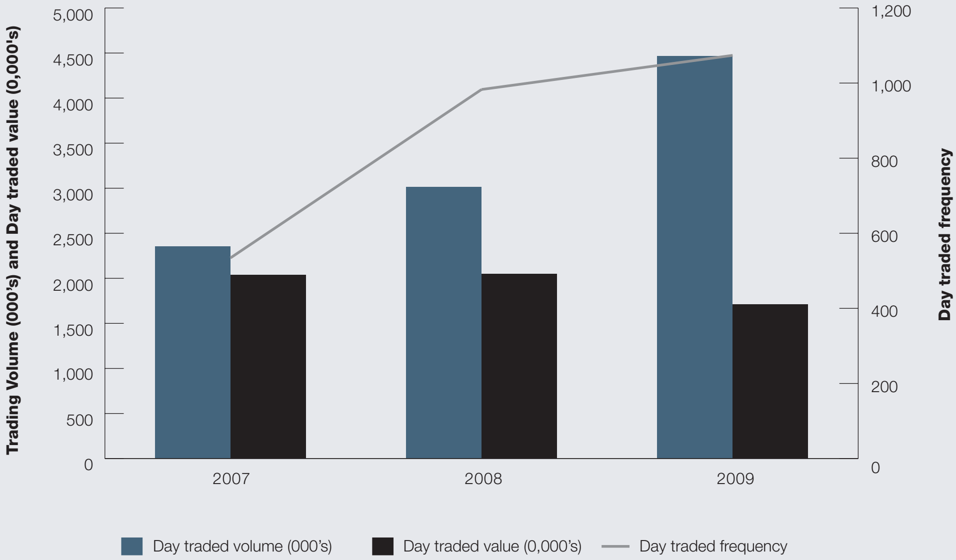
To assess how market quality has evolved through time, various aspects of the market are examined. The data are sourced from Reuters and contain information on the price and volume of every on-market transaction executed, together with prevailing bid and ask quotes and volumes. Specifically, we examine the following aspects of market quality

- Trading activity (day traded volume/value and trading frequency)
- Liquidity (bid-ask spreads and quoted depth)
- Price Impact

Detailed Findings

1. *There has been a significant improvement in the market quality of the S&P/ASX 200 Index underlying securities.*

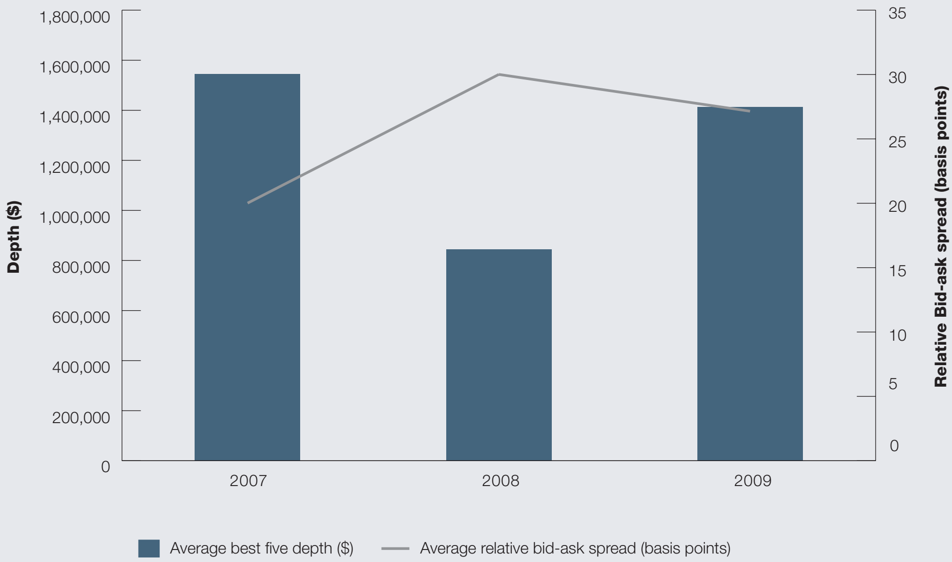
Trading Activity



- During 2009, trading volume and day traded frequency in the underlying securities of the S&P/ASX 200 Index increased by 48% and 9%, respectively, from 2008 levels.[1]
- At the same time, traded value (AUD) fell by 16%, primarily driven by an average 22% lower value for S&P/ASX 200 Index during 2009, compared to 2008.
- Despite lower levels for the S&P/ASX 200 Index during 2009, continued increases in trading volume and turnover represent a large increase in trading activity and provide opportunities for investors to trade in a market without the need to search for counterparties.

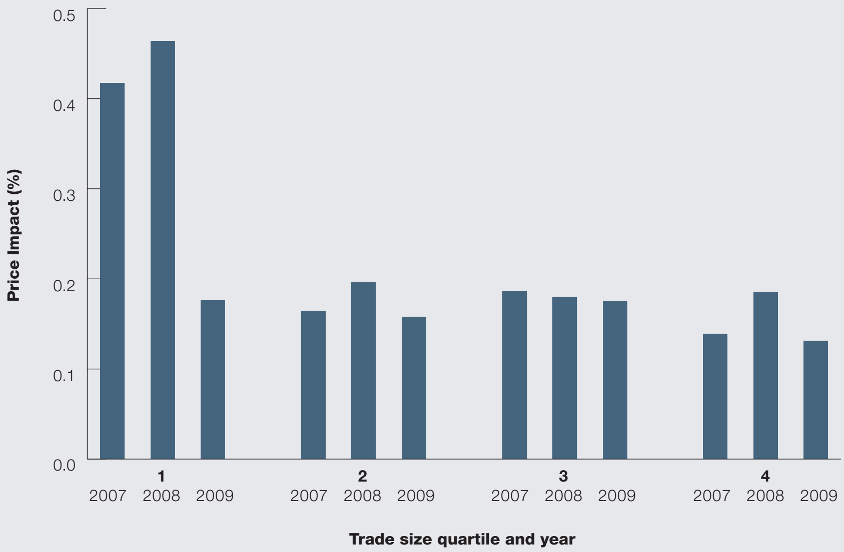
1 Day traded volume/value and day traded frequency are average values per stock per day.

Market Depth and Bid-ask spreads



- The increased trading activity has been met by a 67% increase in the average market depth at the best five quotes from 2008 to 2009.
- Over the same period, the average bid-ask spread decreased by 10%, which represents a 2.85 basis point decrease from 30.01 basis points in 2008 to 27.15 basis points in 2009.
- The increase in market depth and reduction in spreads represent improvement in market quality and demonstrates an increase in investor confidence.

Price Impact

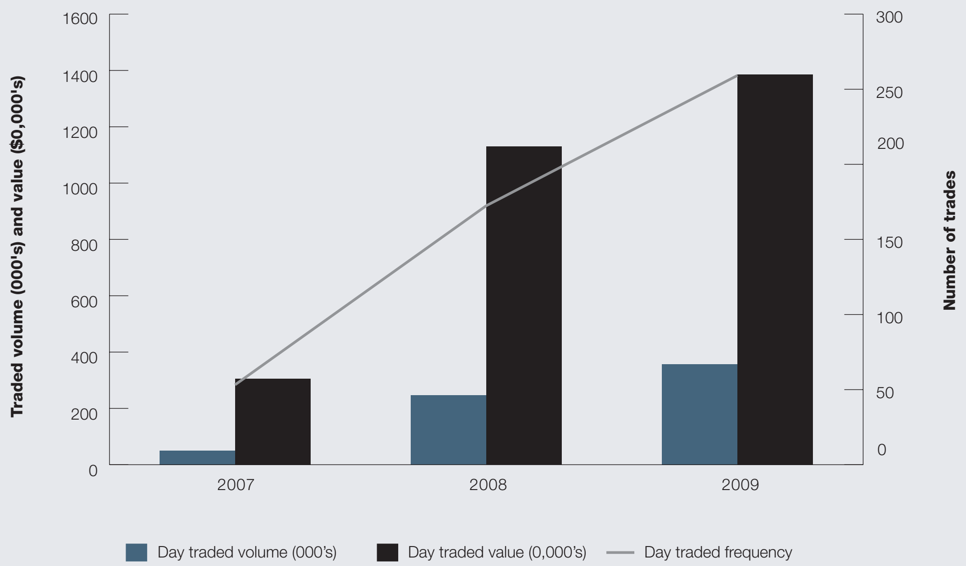


Note: Quartile 1 represents the largest trades, which are in the top 25% of all trades for that particular security. Quartile 4 represents the smallest trades, which are in the bottom 25% of all trades for that particular security. Price impact is a transaction cost measure that examines the impact that different sized trades have on market depth and provides an estimate of the transaction cost incurred by different trade sizes. This measure captures both the bid-ask spread and the amount of liquidity present in the limit-order book before each trade.

- The price impact for the underlying securities of the S&P/ASX 200 Index was reduced across all trade sizes from 2008 to 2009.
- Most notably, price impact was reduced by over 62% for largest sized trades in 2009.
- This reflects an overall increase in market quality for the underlying securities of the S&P/ASX 200 Index which is consistent with the reduction in bid-ask spreads and increased market depth during 2009.

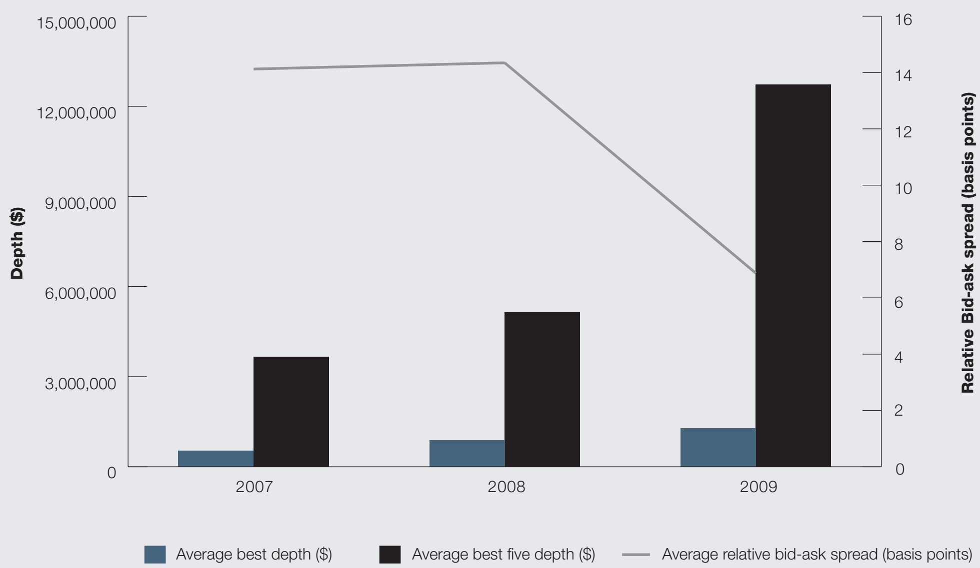
2. *The S&P/ASX 200 (STW) is now an efficient way for investors to gain exposure to the Australian equities market.*

Trading Activity



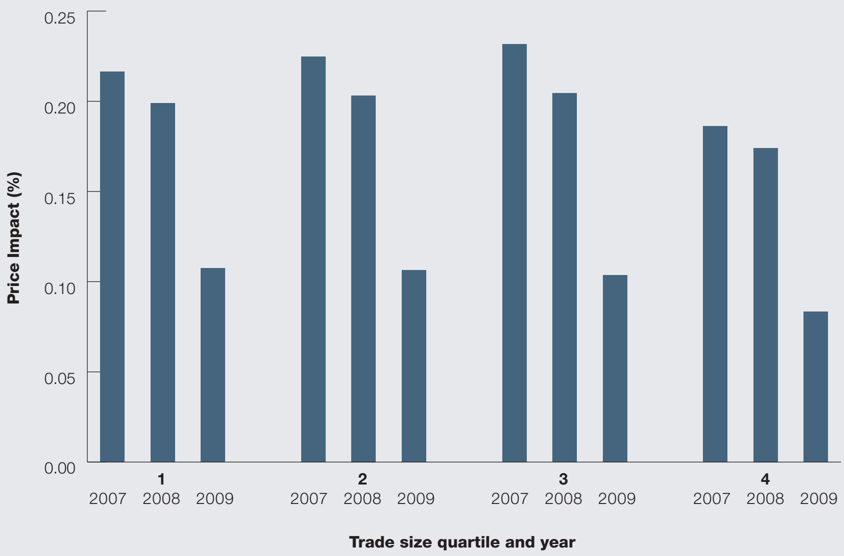
- The SPDR S&P/ASX 200 (STW) is an exchange-traded fund (ETF) that offers exposure to the returns of the S&P/ASX 200 Index.
- The number of trades, volume transacted and dollar value in STW increased by 50%, 45% and 23%, respectively from 2008 to 2009.

Market Depth and Bid-ask spreads



- The increased trading activity in the SPDR S&P/ASX 200 from 2008 to 2009 is met by a 148% increase in average market value of depth at the best five quotes.
- The average bid-ask spread fell by 52%, from 14.34 basis points to 6.87 basis points, over the 2008 to 2009 period.

Price Impact



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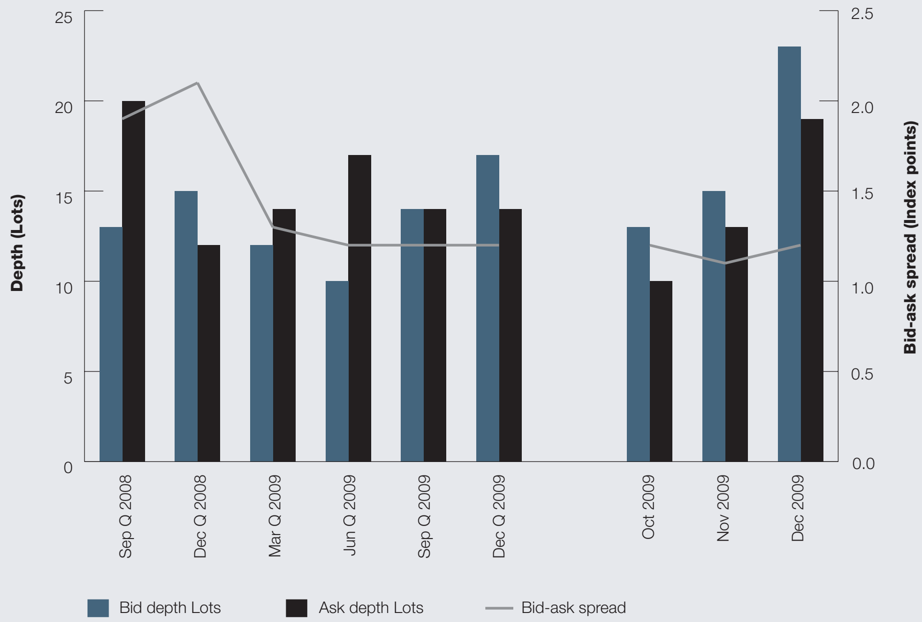
- Price impact in the SPDR S&P/ASX 200, from 2008 to 2009, has fallen by a minimum of 45% for all trade sizes.
- Price impact results demonstrate that transaction costs in the SPDR S&P/ASX 200 have reduced significantly over the 2008 to 2009 period.
- The reduction in transaction costs highlight that the SPDR S&P/ASX 200 provides an efficient way for investors to obtain exposure to the Australian equities market index. This is reflected in the large increases in trading activity over the past 3 years.

3. There has been an improvement in the quality of the ASX SPI 200® Index Futures market

Transaction cost indicators



- The average market depth at the best bid and best ask in the nearest expiry month contract increased in the December quarter 2009, compared to the same quarter of the previous year. There were an average of 17 lots available at the bid and 14 lots available at the offer during the December quarter 2009.
- This level of liquidity is more than sufficient to accommodate the average trade size during day sessions (2 lots).
- The average bid-ask spread narrowed to 1.17 index points in the December quarter 2009, representing AUD29.30 or 2 one-hundredths of one percent of contract value.
- The cost of trading ASX SPI 200® Index Futures continues to be low.

Tracking error

	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Dec Q 2009	Oct 2009	Nov 2009	Dec 2009
Mean of $\lvert R_{AP} - R_{cash} \rvert$									
Weekly (%)	0.24	0.51	0.26	0.10	0.15	0.16	0.12	0.09	0.34
Daily (%)	0.13	0.30	0.16	0.10	0.07	0.09	0.06	0.05	0.16
Standard deviation of $(R_{AP} - R_{cash})$									
Weekly (%)	0.27	0.68	0.24	0.10	0.17	0.25	0.11	0.09	0.48
Daily (%)	0.17	0.36	0.20	0.13	0.08	0.15	0.08	0.07	0.25

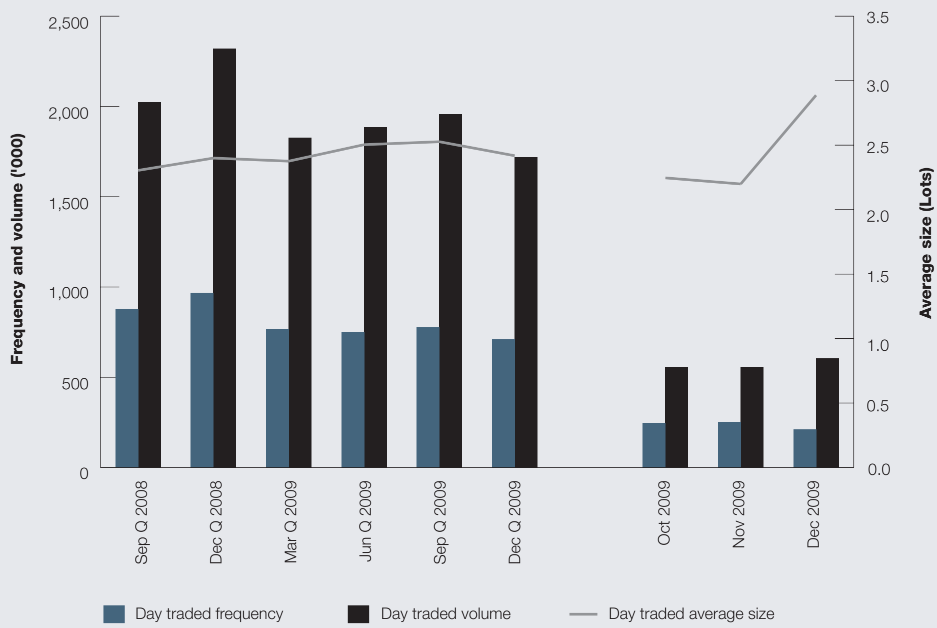
- The weekly average absolute tracking error of returns on the nearest expiry month contract against the S&P/ASX 200 accumulation index was 15 and 16 one-hundredths of one percent over the September 2009 and December 2009 quarters, respectively. This constitutes a significant reduction in tracking errors from the corresponding quarters in 2008.
- The week-to-week variability (standard deviation) of the difference in returns between the nearest expiry month contract and the S&P/ASX 200 accumulation index was 17 and 25 one-hundredths of one percent over the September 2009 and December 2009 quarters, respectively. This again demonstrates a significant reduction in tracking errors relative to the corresponding quarters in 2008.
- These low and stable tracking errors demonstrate that ASX SPI 200® Index Futures provide an efficient way for investors to obtain Australian equities market index exposure synthetically.

Volatility

	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Dec Q 2009	Oct 2009	Nov 2009	Dec 2009
Standard deviation of return									
Weekly (%)	3.00	6.66	4.51	2.43	3.15	2.62	3.23	2.06	2.43
Daily (%)	1.75	2.97	1.52	1.39	1.18	1.11	1.25	1.18	0.86
Average range (Index points)									
Monthly	550	966	532	309	429	349	358	385	303
Weekly	298	480	233	197	191	202	209	202	194
Daily	153	219	103	87	77	83	86	94	70

- Daily return volatility on the nearest expiry month contract decreased from 6.66% index points in the December quarter 2008 to 2.62% in the December 2009 quarter.
- Price volatility on the nearest expiry month contract decreased from 219 index points in the December quarter 2008 to 83 index points in the December 2009 quarter. While volatility has fallen, the index price range still provides profit-making opportunities for traders with a short-term (intraday) trading horizon. The reduction in volatility in the December 2009 quarter resulted from the easing of global uncertainty resulting from the credit crisis which had a rippling effect on the Australian market.

Trading Activity



The number of trades and volume transacted during day sessions in the nearest expiry month contract decreased in the December quarter 2009 relative to the same quarter of the previous year. The average trade size during day sessions remained constant at approximately 2 lots in the December quarter 2009. This trading frequency seen in ASX SPI 200® Index Futures reflects that counterparties are promptly found and effectively reduces the component of execution costs that occurs due to delays in trade execution.

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