

MARKET QUALITY INDICATORS

ASX Equity and Interest Rate Futures



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in association with



ASX

AUSTRALIAN SECURITIES EXCHANGE

INTRODUCTION

In this quarterly series of *Market Quality Indicators*, Dr Andrew Lepone and Mitesh Mistry from the Discipline of Finance at the University of Sydney describe the trading activity and market dynamics that continue to support significant growth in ASX equity and interest rate futures. These statistics highlight the extent of trading opportunities on the Sydney Futures Exchange for global institutions such as hedge funds and commodity trading advisors, as well as the costs associated with executing trades on the Sydney Futures Exchange.

I trust you will find these statistics useful in assessing the opportunities that ASX might present to your own 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



KEN CHAPMAN

General Manager, Interest Rate and CFD Markets
Australian Securities Exchange



ABOUT ASX

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.

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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.

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ASX Equity and Interest Rate Futures

Andrew Lepone and Mitesh Mistry

EXECUTIVE SUMMARY

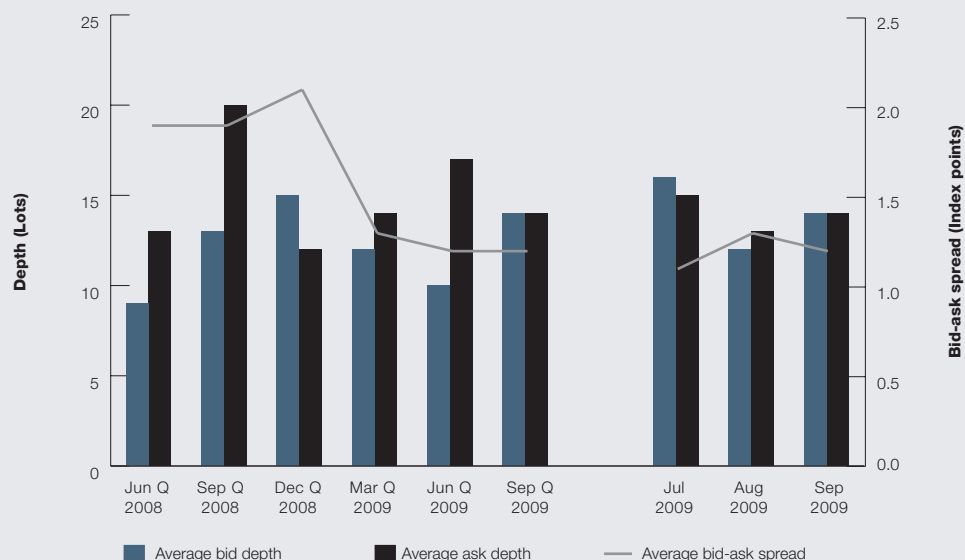
The purpose of this booklet is to provide up-to-date quarterly statistics that enable global institutions to evaluate trading opportunities in the five most actively traded contracts on the Sydney Futures Exchange: *ASX SPI 200[®] Index Futures*, *30 Day Interbank Cash Rate Futures*, *90 Day Bank Accepted Bill Futures*, *3 Year Commonwealth Treasury Bond Futures* and *10 Year Commonwealth Treasury Bond Futures*. These statistics provide measures of (i) transaction costs, (ii) how closely the contracts follow underlying instruments (tracking errors), (iii) price volatility and (iv) trading activity. The key findings for the September quarter 2009 are as follows:

- Market depth at the best quotes in the *3 Year Commonwealth Treasury Bond Futures* increased fourfold compared to March quarter 2009. The bid-ask volume at the best quotes was on average 1,000 contracts during September quarter 2009.
- Market depths at the best quotes in all five contracts provide an efficient way to gain exposure to Australian equity and debt markets. The market provides sufficient liquidity to accommodate trades much larger than the average trade size. The average bid-ask spreads range from AUD13.82 or 0.05 one-hundredths of one percent of contract value for the *30 Day Interbank Cash Rate Futures* to AUD41.00 or 4 one-hundredths of one percent of contract value for the *10 Year Commonwealth Treasury Bond Futures*. The cost of trading all five contracts is low.
- Low and stable tracking errors against underlying instruments demonstrate that the available contracts provide an efficient way to gain exposure to Australian equity and debt markets.
- Price volatility has generally decreased in all of the five contracts relative to the same quarter of the previous year. The average daily price ranges represent AUD1,925 of contract value or 32 percent of the initial margin for nearest expiry month *ASX SPI 200[®] Index Futures* and AUD169 of contract value or 14 percent of the initial margin for nearest expiry month *90 Day Bank Accepted Bill Futures*. These daily price ranges suggest that there are profitable opportunities for traders with a short-term (intraday) trading horizon.
- Average trade size during day sessions increased for *ASX SPI 200[®] Index Futures* and *30 Day Interbank Cash Rate Futures* relative to the same quarter of the previous year.

In summary, the contracts provide potentially profitable opportunities for global institutions such as hedge funds and commodity trading advisors seeking to enhance their performance, which can be exploited at low cost.

ASX SPI 200[®] INDEX FUTURES

1. Transaction Cost Indicators



The average market depth at the best bid in the nearest expiry month contract increased in the September quarter 2009, compared to the same quarter of the previous year, whilst market depth at the best ask decreased. The ASX 200 index during the most recent quarter ranged from a low of 3737 points to a high of 4753 points. There were an average of 14 lots available at the bid and 14 lots available at the offer during the September 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 remained at 1.2 index points in the September quarter 2009, representing AUD30.30 or 3 one-hundredths of one percent of contract value. The cost of trading ASX SPI 200[®] Index Futures continues to be low.

2. Tracking Error

	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Jul 2009	Aug 2009	Sep 2009
Mean of $R_{AP} - R_{cash}$									
Weekly (%)	0.15	0.24	0.51	0.26	0.10	0.15	0.18	0.11	0.15
Daily (%)	0.10	0.13	0.30	0.16	0.10	0.07	0.07	0.07	0.06
Standard deviation of $(R_{AP} - R_{cash})$									
Weekly (%)	0.11	0.27	0.68	0.24	0.10	0.17	0.20	0.13	0.19
Daily (%)	0.13	0.17	0.36	0.20	0.13	0.08	0.08	0.09	0.07

The weekly average absolute tracking error of returns on the nearest expiry month contract against the S&P/ASX 200 accumulation index ranged from 10 to 51 one-hundredths of one percent over the six quarters to September 2009. Alternatively, 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 ranged from 10 to 68 one-hundredths of one percent. 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.

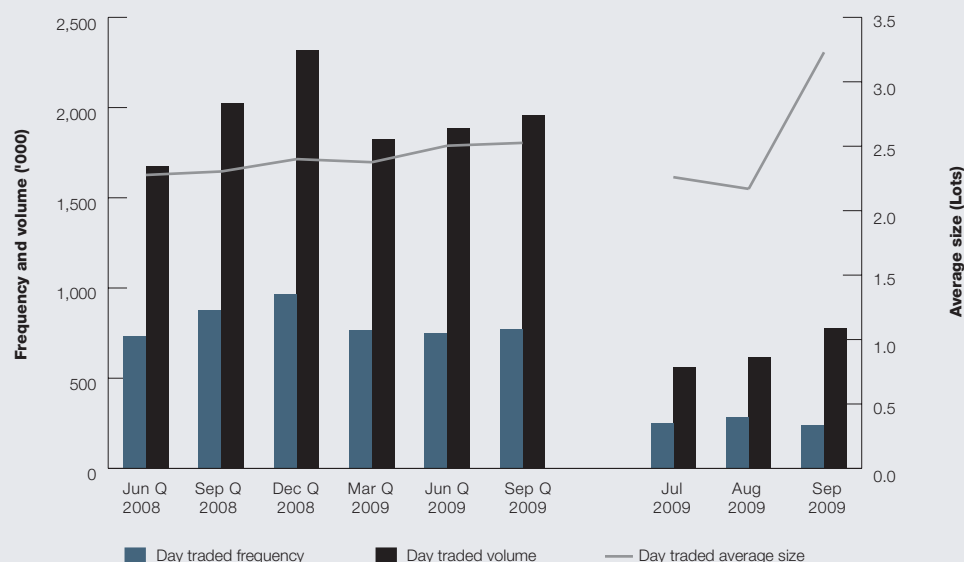
ASX SPI 200® INDEX FUTURES (continued)

3. Volatility

	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Jul 2009	Aug 2009	Sep 2009
Standard deviation of return									
Weekly (%)	2.65	3.00	6.66	4.51	2.43	3.15	3.38	4.08	2.53
Daily (%)	1.13	1.75	2.97	1.52	1.39	1.18	1.25	1.29	1.03
Average range (Index points)									
Monthly	492	550	966	532	309	429	563	358	366
Weekly	254	298	480	233	197	191	188	213	173
Daily	114	153	219	103	87	77	71	88	74

Daily price volatility of returns on the nearest expiry month contract decreased in the September quarter 2009 relative to the same quarter of the previous year. The average daily price range of 77 index points for the September quarter 2009 which represents AUD1,925 of contract value or 32 percent of the initial margin¹. Global uncertainty as well as the credit crisis has had a rippling effect on the Australian equity market in the previous quarters. This daily price range suggests that there were improved profit-making opportunities for traders with a short-term (intraday) trading horizon.

4. Trading Activity

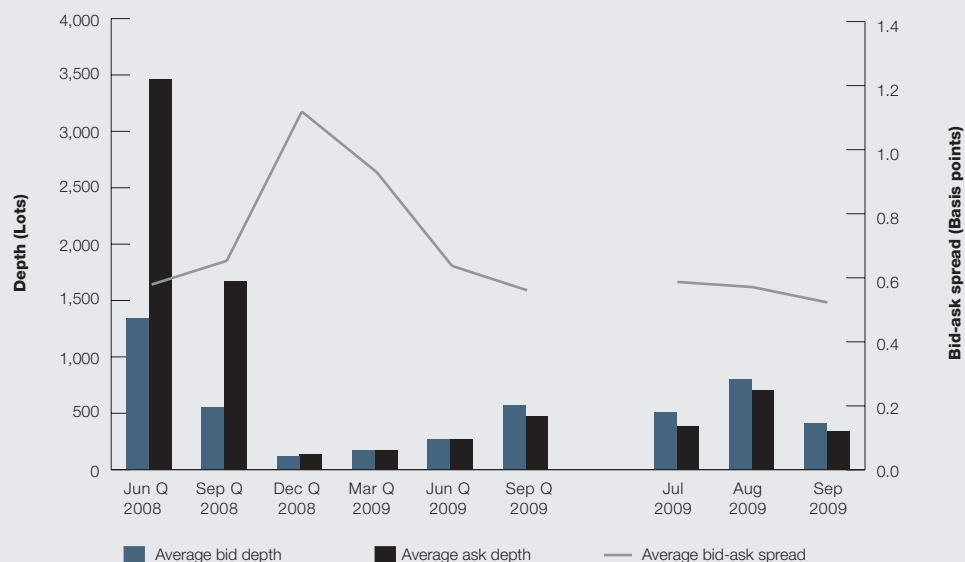


The number of trades and volume transacted during day sessions in the nearest expiry month contract remained at similar levels in the September quarter 2009 relative to the same quarter of the previous year. The average trade size during day sessions remained constant at approximately 2 lots in the September quarter 2009.

¹ Effective from 4 September 2009.

30 DAY INTERBANK CASH RATE FUTURES

1. Transaction Cost Indicators



The average ask depth at the best quotes in the second² nearest expiry month contract decreased in the September quarter 2009 when compared to the same quarter of the previous year, whilst bid depth remained at similar levels. There were an average of 570 lots available at the bid and 473 lots available at the offer during the September quarter 2009. There has been a steady increase in market depth at the best quotes since the December quarter 2008. The average bid-ask spread narrowed to 0.5 basis point from 0.6 in the June quarter 2009, representing AUD13.82 or 0.05 one-hundredths of one percent of contract value.

2. Tracking Error

	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Jul 2009	Aug 2009	Sep 2009
Mean of $ R_{AP} - R_{cash} $									
Weekly (%)	0.0009	0.0035	0.0088	0.0058	0.0052	0.0015	0.0014	0.0016	0.0015
Daily (%)	0.0005	0.0017	0.0084	0.0045	0.0015	0.0007	0.0006	0.0008	0.0007
Standard deviation of $(R_{AP} - R_{cash})$									
Weekly (%)	0.0007	0.0052	0.0109	0.0067	0.0076	0.0021	0.0008	0.0021	0.0026
Daily (%)	0.0008	0.0035	0.0188	0.0125	0.0034	0.0009	0.0008	0.0010	0.0010

The weekly average absolute tracking error of returns on the second nearest expiry month contract against the Interbank Overnight Cash Rate published by the Reserve Bank of Australia (RBA) ranged from 0.09 to 0.88 one-hundredths of one percent over the six quarters to September 2009. Alternatively, the week-to-week variability (standard deviation) of the difference in returns between the second nearest expiry month contract and the Interbank Overnight Cash Rate ranged from 0.07 to 1.09 one-hundredths of one percent. These low and stable tracking errors demonstrate that *30 Day Interbank Cash Rate Futures* provide an efficient way for global institutions to offset changes in funding costs and for acting upon expectations about interest rates at the short end of the yield curve.

² Second contract month is the most actively traded contract. The spot month 30 Day Cash Rate Futures contract typically ceases to trade after the Reserve Bank of Australia official cash rate announcement on the first Tuesday of the month.

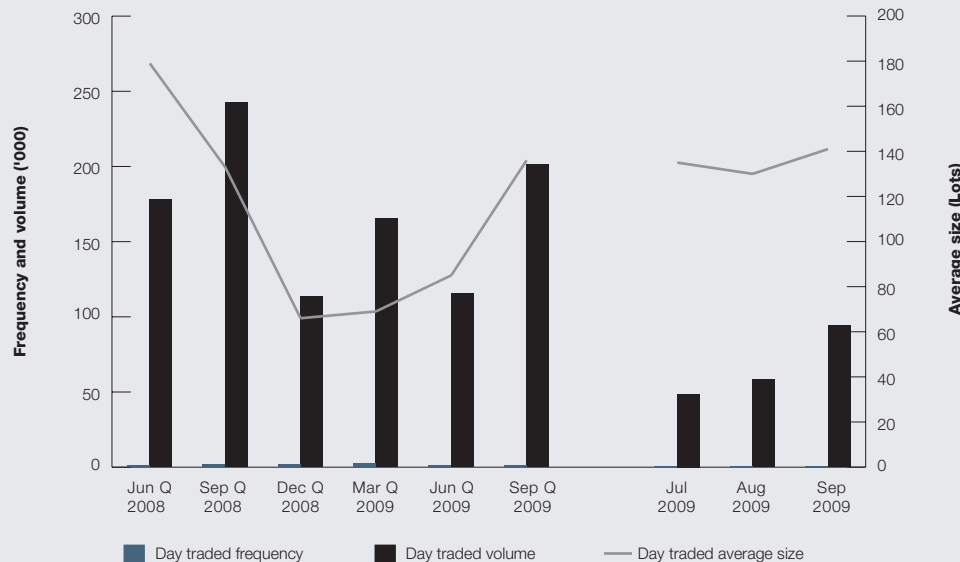
30 DAY INTERBANK CASH RATE FUTURES (continued)

3. Volatility

	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Jul 2009	Aug 2009	Sep 2009
Standard deviation of return									
Weekly (%)	0.0012	0.0049	0.0257	0.0064	0.0049	0.0018	0.0005	0.0017	0.0022
Daily (%)	0.0008	0.0023	0.0088	0.0048	0.0020	0.0009	0.0008	0.0010	0.0010
Average range (Index points)									
Monthly	0.052	0.213	0.708	0.430	0.230	0.090	0.085	0.055	0.130
Weekly	0.022	0.078	0.282	0.177	0.081	0.041	0.031	0.033	0.061
Daily	0.009	0.026	0.076	0.060	0.023	0.014	0.012	0.012	0.019

Price volatility on the second nearest expiry month contract decreased in the September quarter 2009 relative to the same quarter of the previous year. The average monthly price range of 9 basis points for the September quarter 2009 represents AUD222 of contract value or 21 percent of the initial margin³. There still exist profitable opportunities for traders with a short-term trading horizon in the September 2009 quarter, particularly when there is heightened uncertainty about forthcoming monetary policy action in the near future.

4. Trading Activity

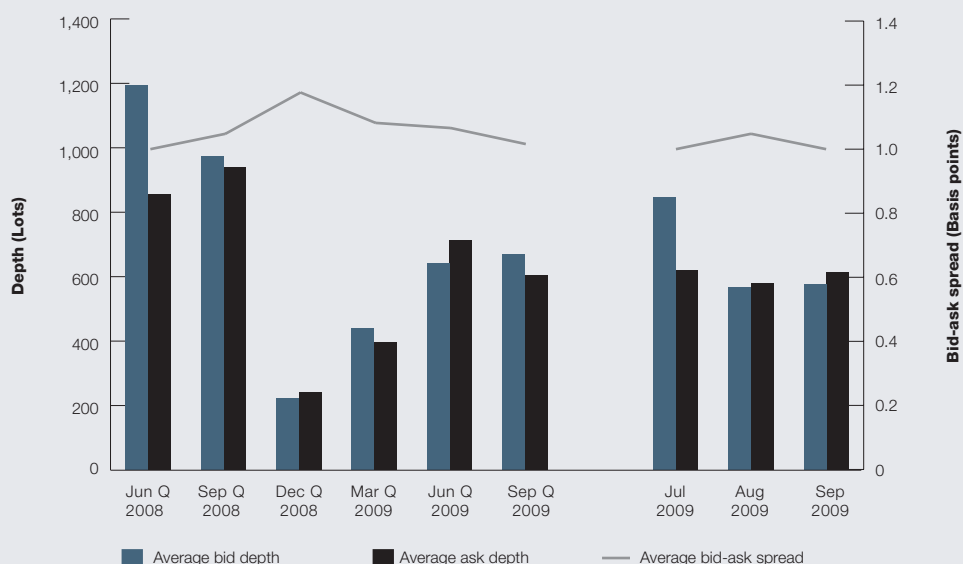


The number of trades and volume transacted during day sessions in the second nearest expiry month contract decreased in the September quarter 2009 relative to the same quarter of the previous year. Volume transacted in the September quarter 2009 compared to the previous three quarters increased. The average trade size during day sessions in second nearest expiry month 30 Day Interbank Cash Rate Futures increased from 85 lots in the June quarter 2009 to 136 lots in the September quarter 2009 respectively.

3 Effective from 5 June 2009.

90 DAY BANK ACCEPTED BILL FUTURES

1. Transaction Cost Indicators



The average market depth at the best quotes in the nearest expiry month contract decreased in the September quarter 2009 relative to the same quarter of the previous year. There were an average of 669 lots available at the bid and 605 lots available at the offer during the September quarter 2009. This level of liquidity is still sufficient to accommodate trades much larger than the average size during day sessions. The average bid-ask spread narrowed to 1.0 basis point in the September quarter 2009, representing AUD24.63 or 0.2 one-hundredths of one percent of contract value. The cost of trading *90 Day Bank Accepted Bill Futures* continues to be very low.

2. Tracking Error

	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Jul 2009	Aug 2009	Sep 2009
Mean of $ R_{AP} - R_{cash} $									
Weekly (%)	0.007	0.012	0.042	0.026	0.010	0.013	0.013	0.012	0.013
Daily (%)	0.004	0.006	0.013	0.009	0.005	0.006	0.004	0.005	0.007
Standard deviation of $(R_{AP} - R_{cash})$									
Weekly (%)	0.010	0.015	0.049	0.025	0.013	0.017	0.018	0.018	0.017
Daily (%)	0.005	0.008	0.021	0.014	0.006	0.008	0.006	0.007	0.010

The weekly average absolute tracking error of returns on the nearest expiry month contract against 90 day bank accepted bills estimated closing yields published by the RBA ranged from 0.7 to 4.2 one-hundredths of one percent over the six quarters to September 2009. Alternatively, the week-to-week variability (standard deviation) of the difference in returns between the nearest expiry month contract and 90 day bank accepted bills yields ranged from 1.0 to 4.9 one-hundredths of one percent. These low and stable tracking errors demonstrate that *90 Day Bank Accepted Bill Futures* provide an effective way to hedge against movements in short-term interest rates.

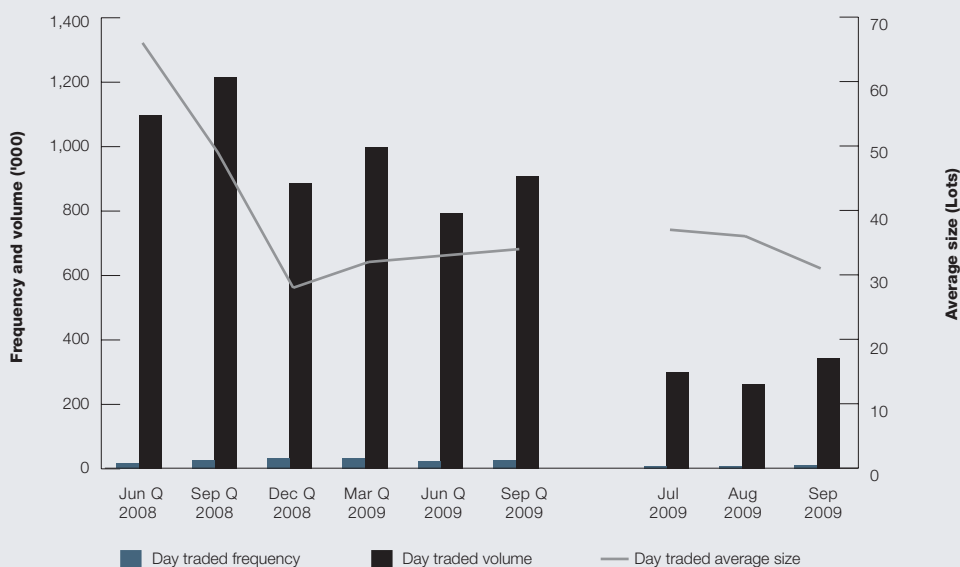
90 DAY BANK ACCEPTED BILL FUTURES (continued)

3. Volatility

	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Jul 2009	Aug 2009	Sep 2009
Standard deviation of return									
Weekly (%)	0.012	0.021	0.128	0.042	0.021	0.025	0.019	0.035	0.016
Daily (%)	0.009	0.015	0.038	0.017	0.008	0.011	0.007	0.013	0.012
Average range (Index points)									
Monthly	0.28	0.50	1.12	0.57	0.29	0.34	0.26	0.30	0.47
Weekly	0.14	0.20	0.49	0.27	0.14	0.17	0.12	0.18	0.22
Daily	0.07	0.09	0.17	0.12	0.06	0.07	0.06	0.07	0.08

Weekly price volatility of returns on the nearest expiry month contract increased in the September quarter 2009 relative to the same quarter of the previous year. The average daily price range of 7 basis points for the September quarter 2009 represents AUD169 of contract value or 14 percent of the initial margin⁴. This daily price range suggests that there were improved profit-making opportunities for traders with a short-term (intraday) trading horizon.

4. Trading Activity

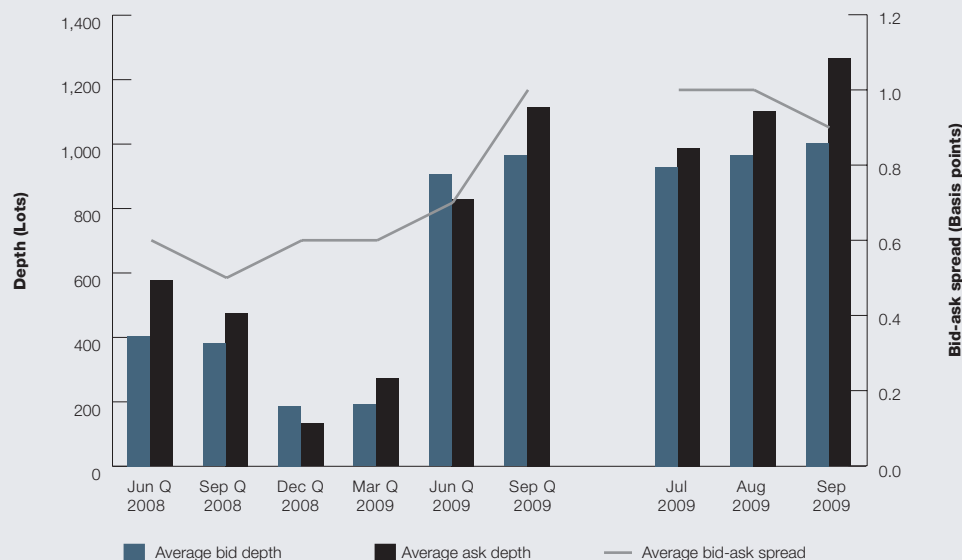


The number of trades increased in the nearest expiry month contract for the September quarter 2009 relative the same quarter of the previous year whilst volume transacted decreased. Volume transacted for the September quarter 2009 relative to the June quarter 2009 increased. The average trade size during day sessions in nearest expiry month *90 Day Bank Accepted Bill Futures* decreased from 49 lots in the September quarter 2008 to 34 lots in the September quarter 2009.

4 Effective from 5 June 2009.

3 YEAR TREASURY BOND FUTURES

1. Transaction Cost Indicators



The average market depth at the best quotes in the nearest expiry month contract increased in the September quarter 2009 relative to the same quarter of the previous year. There were an average of 965 lots available at the bid and 1,115 lots available at the offer during the September quarter 2009. This level of liquidity is sufficient to accommodate trades much larger than the average size during day sessions (40 lots). The average bid-ask spread broadened to 1 basis point in the September quarter 2009⁵, representing AUD27.28 or 0.03 one-hundredths of one percent of contract value. Following the increase of the minimum price increment from 0.5 basis point to 1 basis point in May 2009, average bid and ask depth increased fourfold.

2. Tracking Error

	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Jul 2009	Aug 2009	Sep 2009
Mean of $R_{AP} - R_{cash}$									
Weekly (%)	0.12	0.10	0.10	0.09	0.07	0.08	0.09	0.10	0.05
Daily (%)	0.03	0.04	0.05	0.04	0.03	0.04	0.04	0.04	0.04
Standard deviation of $(R_{AP} - R_{cash})$									
Weekly (%)	0.03	0.02	0.11	0.11	0.06	0.09	0.12	0.08	0.07
Daily (%)	0.03	0.05	0.08	0.05	0.04	0.05	0.05	0.05	0.05

The weekly average absolute tracking error of returns on the nearest expiry month contract against the second nearest maturity basket bond underlying the contract (5.75 percent June 2011 treasury bond from 15 December 2007 to 13 March 2009 and 5.75 percent April 2012 treasury bond from 14 March 2009 to 30 September 2009) ranged from 7 to 12 one-hundredths of one percent over the six quarters to September 2009. Alternatively, the week-to-week variability (standard deviation) of the difference in returns between the nearest expiry month contract and the second nearest maturity basket bond underlying the contract ranged from 2 to 11 one-hundredths of one percent. These low and stable tracking errors demonstrate that *3 Year Commonwealth Treasury Bond Futures* provide an efficient way to gain exposure to medium-term Australian debt markets.

⁵ The minimum price increment was increased from 0.5 basis point to 1 basis point on 11 May 2009.

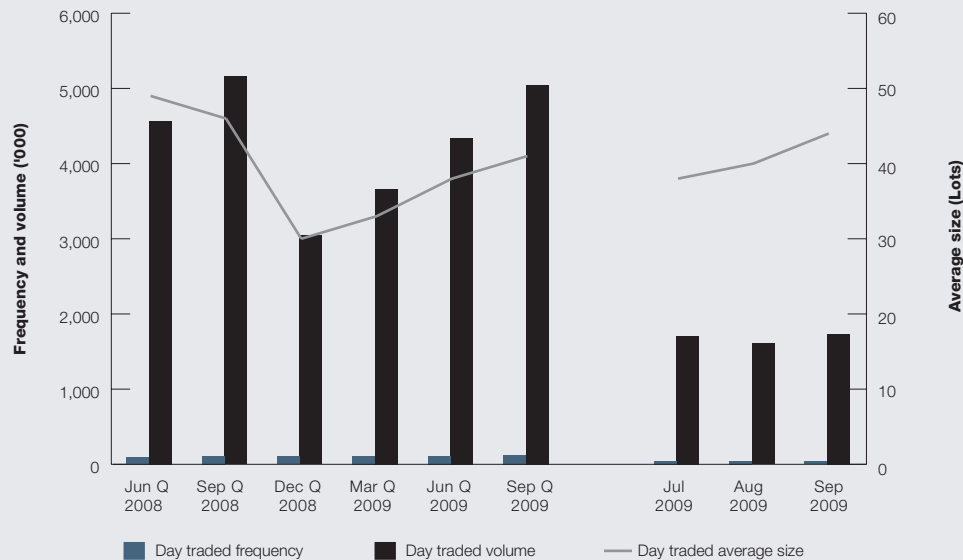
3 YEAR TREASURY BOND FUTURES (continued)

3. Volatility

	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Jul 2009	Aug 2009	Sep 2009
Standard deviation of return									
Weekly (%)	0.45	0.27	0.70	0.65	0.48	0.58	0.74	0.54	0.31
Daily (%)	0.22	0.20	0.30	0.26	0.24	0.23	0.23	0.28	0.19
Average range (Index points)									
Monthly	0.55	0.64	0.92	0.66	0.66	0.57	0.84	0.45	0.43
Weekly	0.27	0.26	0.46	0.34	0.30	0.32	0.37	0.29	0.30
Daily	0.12	0.13	0.19	0.15	0.13	0.14	0.14	0.15	0.12

Weekly price volatility measured by the standard deviation of daily returns on the nearest expiry month contract increased in the September quarter 2009 compared to the same quarter of the previous year. The average daily price range of 14 basis points for the September quarter 2009 represents AUD383 of contract value or 33 percent of the initial margin⁶. A daily price range of this order of magnitude suggests that there are profitable opportunities for traders with a short-term (intraday) trading horizon.

4. Trading Activity

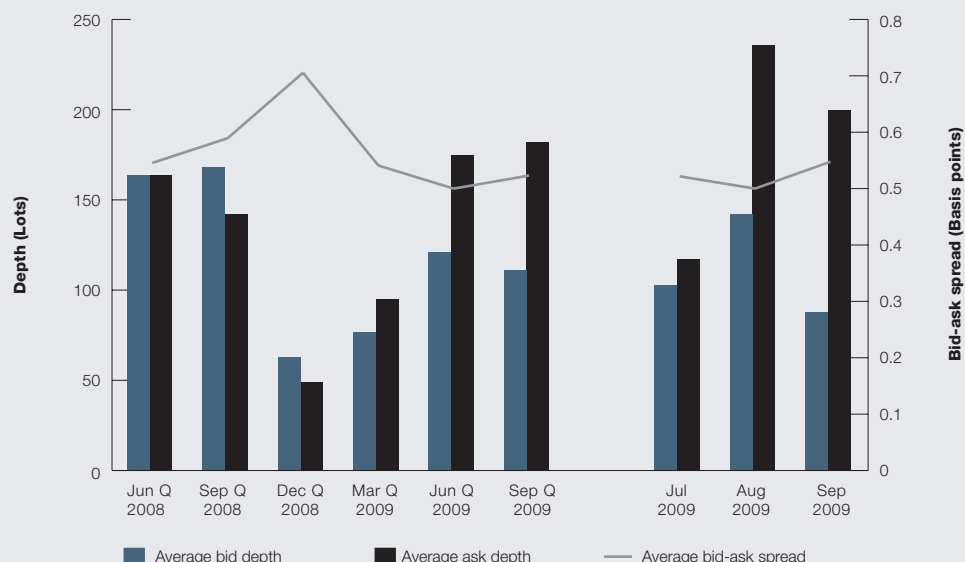


The number of trades transacted during day sessions and traded volume in the nearest expiry month contract remained at similar levels in the September quarter 2009 when compared to the same quarter of the previous year. Volume transacted in the September quarter 2009 compared to the previous three quarters increased. The average trade size during day sessions in nearest expiry month *3 Year Commonwealth Treasury Bond Futures* decreased from 46 lots in September quarter 2008 to 41 lots in September quarter 2009.

6 Effective from 4 September 2009.

10 YEAR TREASURY BOND FUTURES

1. Transaction Cost Indicators



The bid depth at the best quotes in the nearest expiry month contract decreased whilst ask depth increased in the September quarter 2009 relative to the same quarter of the previous year. There were an average of 111 lots available at the bid and 182 lots available at the offer during the September quarter 2009. This level of liquidity is sufficient to accommodate trades much larger than the average size during day sessions (14 lots). The average bid-ask spread remained close to the minimum tick (0.5 basis points) in the September quarter 2009, representing AUD41.00 or 4 one-hundredths of one percent of contract value. The cost of trading *10 Year Commonwealth Treasury Bond Futures* continues to be low.

2. Tracking Error

	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Jul 2009	Aug 2009	Sep 2009
Mean of $R_{AP} - R_{cash}$									
Weekly (%)	0.16	0.10	0.32	0.08	0.08	0.12	0.09	0.12	0.16
Daily (%)	0.08	0.09	0.13	0.08	0.05	0.06	0.06	0.05	0.07
Standard deviation of $(R_{AP} - R_{cash})$									
Weekly (%)	0.11	0.12	0.43	0.09	0.07	0.11	0.13	0.10	0.05
Daily (%)	0.09	0.12	0.20	0.29	0.07	0.09	0.09	0.07	0.10

The weekly average absolute tracking error of returns on the nearest expiry month contract against the second nearest maturity basket bond underlying the contract (6 percent February 2017 treasury bond from 1 January 2007 to 15 December 2008 and 5.25 March 2019 treasury bond from 16 December 2008 to 30 September 2009) ranged from 8 to 32 one-hundredths of one percent over the six quarters to September 2009. Alternatively, the week-to-week variability (standard deviation) of the difference in returns between the nearest expiry month contract and the second nearest maturity basket bond underlying the contract ranged from 7 to 43 one-hundredths of one percent. These low and stable tracking errors demonstrate that *10 Year Commonwealth Treasury Bond Futures* provide an efficient way to gain exposure to long-term Australian debt markets.

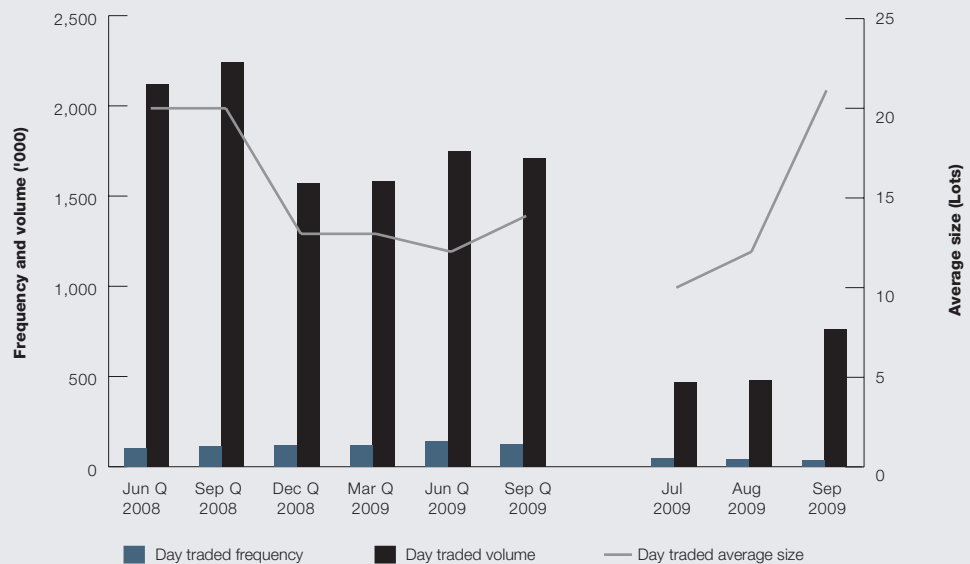
10 YEAR TREASURY BOND FUTURES (continued)

3. Volatility

	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jun Q 2009	Sep Q 2009	Jul 2009	Aug 2009	Sep 2009
Standard deviation of return									
Weekly (%)	0.83	0.58	1.77	1.55	1.43	1.01	1.42	0.79	0.65
Daily (%)	0.53	0.57	0.87	0.78	0.66	0.60	0.64	0.66	0.50
Average range (Index points)									
Monthly	0.45	0.50	0.81	0.53	0.62	0.45	0.56	0.46	0.35
Weekly	0.24	0.24	0.42	0.34	0.30	0.25	0.30	0.24	0.21
Daily	0.11	0.12	0.18	0.15	0.12	0.12	0.13	0.13	0.11

Weekly price volatility measured by the standard deviation of daily returns on the nearest expiry month contract increased in the September quarter 2009 relative to the same quarter of the previous year. The average daily price range of 12 basis points for the September quarter 2009 represents AUD947 of contract value or 33 percent of the initial margin⁷. A daily price range of this order of magnitude suggests that there are profitable opportunities for traders with a short-term (intraday) trading horizon.

4. Trading Activity



The volume transacted during day sessions in the nearest expiry month contract decreased in the September quarter 2009 relative to the same quarter of the previous year, whilst the day traded frequency increased in the September quarter 2009 compared to the previous quarter. The month of September had the highest increase in traded volume compared to the other months in the same quarter. The average trade size during day sessions in nearest expiry month *10 Year Commonwealth Treasury Bond Futures* decreased from 20 lots in the September quarter 2008 to 14 lots in the September quarter 2009.

7 Effective from 4 September 2009.

NOTES

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