MARKET QUALITY INDICATORS

ASX Equity and Interest Rate Futures

By Professor Alex Frino and Mitesh Mistry
of the University of Sydney, Australia

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in association with

ASX
AUSTRALIAN SECURITIES EXCHANGE

INTRODUCTION

In this quarterly series of *Market Quality Indicators*, Professor Alex Frino 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 available for institutions such as hedge funds and commodity trading advisors, as well as the costs associated with trade execution.

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

Regards,

Ken Chapman
General Manager, Interest Rate & New Markets

Richard Murphy
General Manager, Equity Markets

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 Australian Stock Exchange Limited and SFE Corporation Limited, the holding company for the Sydney Futures Exchange.

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Its diverse domestic and international customer base ranges from issuers of a variety of listed securities, corporates, investment banks, trading banks, fund managers, hedge funds, CTAs, proprietary and retail traders who require the capital formation, risk transfer and price discovery services that ASX offers, as well as the functions that ASX provides as a market operator, supervisor, central counterparty clearer and payments system facilitator.

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ASX Equity and Interest Rate Futures

Alex Frino and Mitesh Mistry

EXECUTIVE SUMMARY

The purpose of this booklet is to provide up-to-date quarterly statistics that enable institutions to evaluate trading opportunities in the five most actively traded futures contracts on the Australian Securities 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 March quarter 2009 are as follows:

- 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 AUD17.56 or 2 one-hundredths of one percent of contract value for the 3 Year Commonwealth Treasury Bond Futures to AUD47.50 or 3 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.

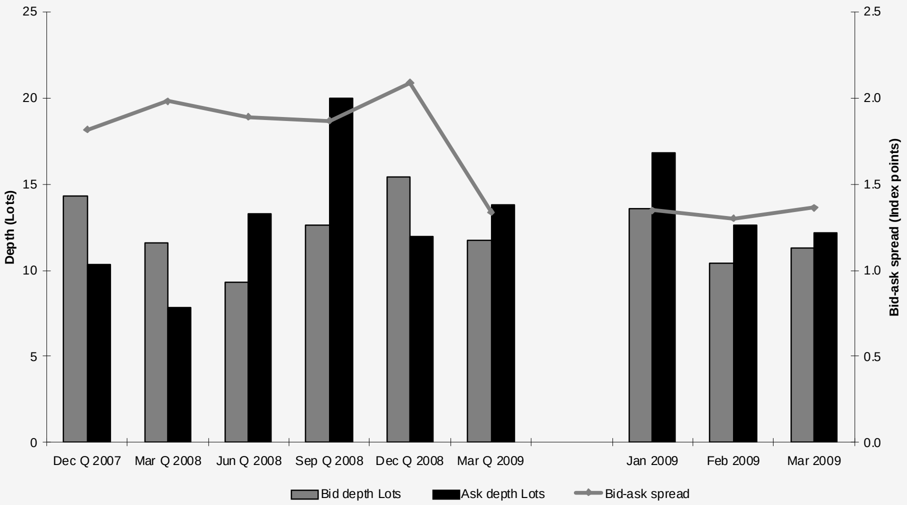
- Price volatility (weekly standard deviation of returns) has increased in all of the five contracts relative to the same quarter of the previous year. The continuing uncertainty present in both debt and equity markets are indicative of these increases in price volatility during the March 2009 quarter. The average daily price ranges represent AUD2,779 of contract value or 34 percent of the initial margin for nearest expiry month *ASX SPI 200® Index Futures* and AUD148.0 of contract value or 15 percent of the initial margin for nearest expiry month *30 Day Bank Accepted Bill Futures*. These daily price ranges suggest that there are profitable opportunities for traders with a short-term (intraday) trading horizon.

- Traded average size during day sessions decreased in all of the contracts examined relative to the same quarter of the previous year.

In summary, the contracts provide potentially profitable opportunities for 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 remained at similar levels in the March quarter 2009, compared to the same quarter of the previous year, while market depth at the best ask increased. The ASX 200 index during the most recent quarter ranged from a low of 3145.5 points to a high of 3779.7 points. There were an average of 12 lots available at the bid and 14 lots available at the offer during the March 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 1.3 index points in the March quarter 2009, representing AUD33.47 or 4 one-hundredths of one percent of contract value. The cost of trading *ASX SPI 200® Index Futures* continues to be low.

2. Tracking Error

	Dec Q 2007	Mar Q 2008	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jan 2009	Feb 2009	Mar 2009
Mean of |R_{AP} - R_{cash}|									
Weekly (%)	0.16	0.26	0.15	0.24	0.51	0.26	0.29	0.24	0.24
Daily (%)	0.12	0.13	0.10	0.13	0.30	0.16	0.17	0.15	0.15
Standard deviation of (R_{AP} - R_{cash})									
Weekly (%)	0.14	0.34	0.11	0.27	0.68	0.24	0.24	0.30	0.27
Daily (%)	0.14	0.17	0.13	0.17	0.36	0.20	0.25	0.18	0.17

The weekly average absolute tracking error of returns on the nearest expiry month contract against the S&P/ASX 200 accumulation index ranged from 15 to 51 one-hundredths of one percent over the six quarters to March 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 11 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.

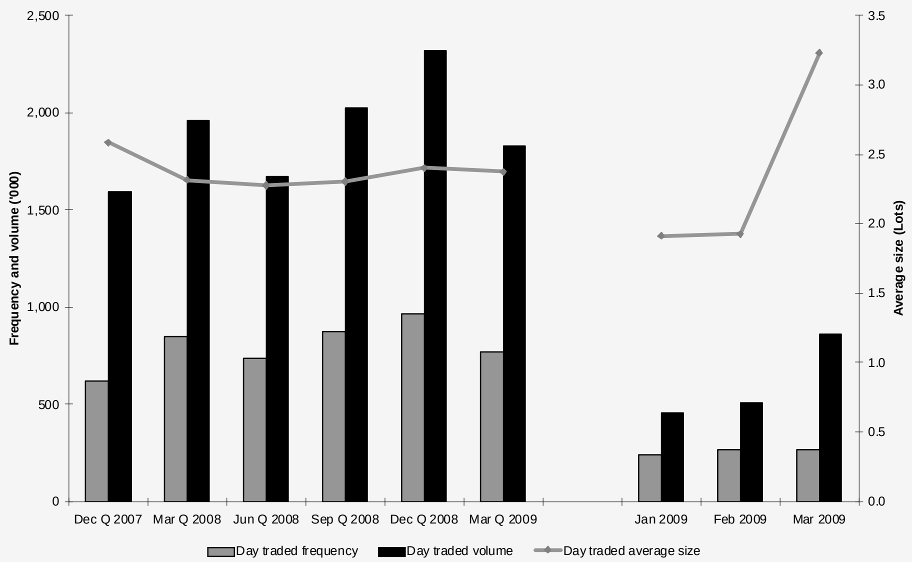
ASX SPI 200™ INDEX FUTURES (continued)

3. Volatility

	Dec Q 2007	Mar Q 2008	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jan 2009	Feb 2009	Mar 2009
Standard deviation of return									
Weekly (%)	1.75	3.21	2.65	3.00	6.66	4.51	4.91	3.12	6.28
Daily (%)	1.07	1.93	1.13	1.75	2.97	1.52	1.86	1.06	1.50
Average range (index points)									
Monthly	509	802	492	550	966	532	580	275	740
Weekly	226	353	254	298	480	233	280	177	231
Daily	117	175	114	153	219	103	119	102	89

Price volatility on the nearest expiry month contract increased in the March quarter 2009 relative to the same quarter of the previous year. The average daily price range of 103 index points for the March quarter 2009 represents AUD2,579 of contract value or 32 percent of the initial margin effective from 19 February 2009. The high standard deviation of returns witnessed in March quarter 2009 resulted from global economic conditions. Global uncertainty as well as the credit crisis has had a rippling effect on the Australian equity market. This higher daily price range suggests that there were improved profit-making opportunities for traders with a short-term (intraday) trading horizon.

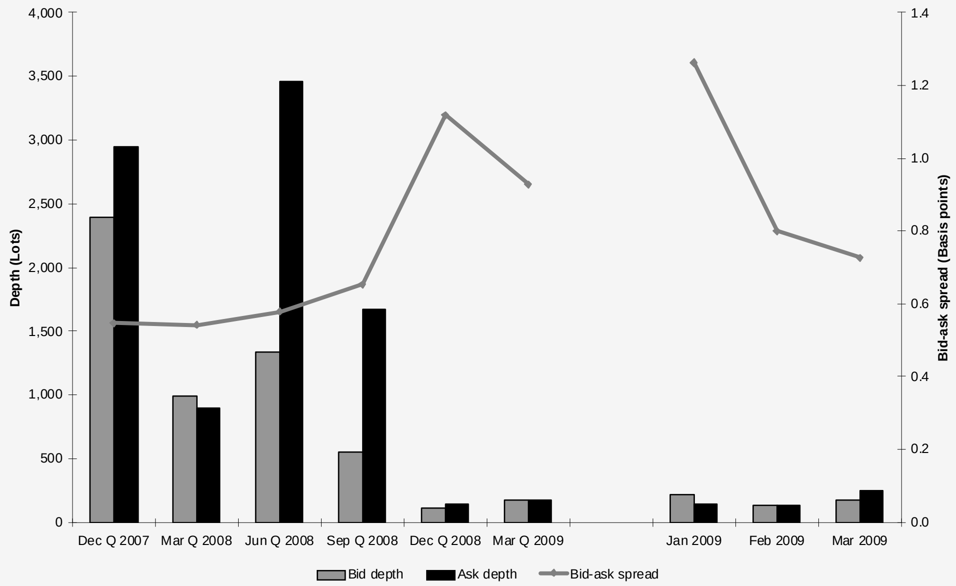
4. Trading Activity



The number of trades and volume transacted during day sessions in the nearest expiry month contract remained similar levels in the March 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 March quarter 2009. The higher trading frequency seen in *ASX SPI 200® Index Futures* reflects that counterparties are promptly found and effectively reduces the component of execution cost that occurs due to delays in trade execution.

ASX 30 DAY INTERBANK CASH RATE FUTURES

1. Transaction Cost Indicators



The average market depth at the best quotes in the second nearest expiry month contract was lower in the March quarter 2009 than in the same quarter of the previous year. There were an average of 177 lots available at the bid and 176 lots available at the offer during the March quarter 2009. The average bid-ask spread increased to 1 basis point from 0.5 in the March quarter 2008, representing AUD22.90 or 0.08 one-hundredths of one percent of contract value.

2. Tracking Error

	Dec Q 2007	Mar Q 2008	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jan 2009	Feb 2009	Mar 2009
Mean of | R_{AP} - R_{cash}|									
Weekly (%)	0.0037	0.0037	0.0009	0.0035	0.0088	0.0058	0.0068	0.0055	0.0049
Daily (%)	0.0011	0.0017	0.0005	0.0017	0.0084	0.0045	0.0021	0.0087	0.0029
Standard deviation of (R_{AP} - R_{cash})									
Weekly (%)	0.0071	0.0062	0.0007	0.0052	0.0109	0.0067	0.0090	0.0070	0.0016
Daily (%)	0.0031	0.0044	0.0008	0.0035	0.0188	0.0125	0.0028	0.0209	0.0052

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 March 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 institutions to offset changes in funding costs and for acting upon expectations about interest rates at the short end of the yield curve.

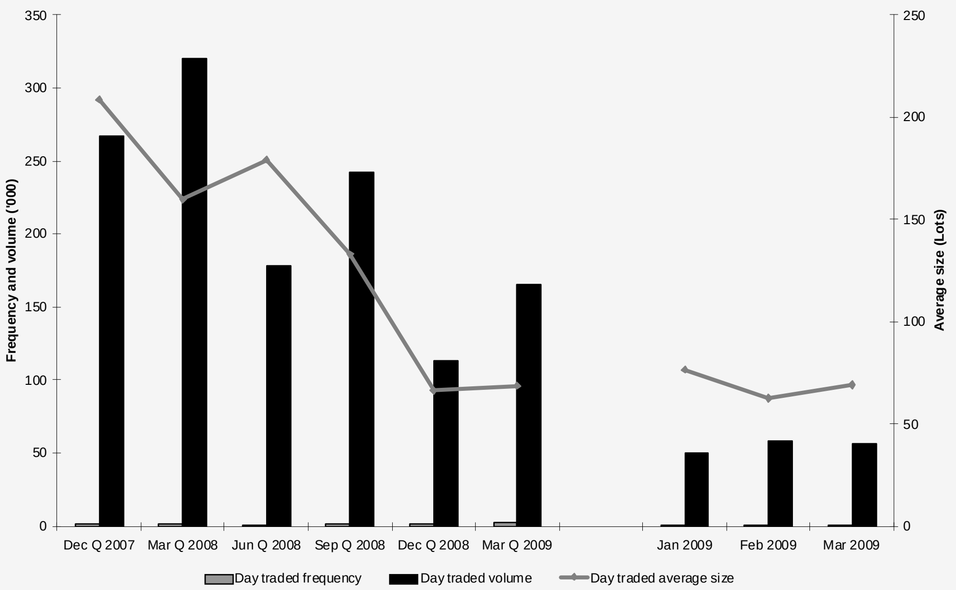
ASX 30 DAY INTERBANK CASH RATE FUTURES

3. Volatility

	Dec Q 2007	Mar Q 2008	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jan 2009	Feb 2009	Mar 2009
Standard deviation of return									
Weekly (%)	0.0028	0.0039	0.0012	0.0049	0.0257	0.0064	0.0084	0.0066	0.0021
Daily (%)	0.0010	0.0016	0.0008	0.0023	0.0088	0.0048	0.0026	0.0059	0.0052
Average range (Index points)									
Monthly	0.085	0.138	0.052	0.213	0.708	0.430	0.210	0.605	0.475
Weekly	0.032	0.051	0.022	0.078	0.282	0.177	0.107	0.273	0.170
Daily	0.012	0.019	0.009	0.026	0.076	0.060	0.036	0.083	0.062

Price volatility on the second nearest expiry month contract increased in the March quarter 2009 relative to the same quarter of the previous year. The average monthly price range of 43 basis points for the March quarter 2009 represents AUD1,060 of contract value. There still exist profitable opportunities for traders with a short-term trading horizon in the March 2009 quarter, particularly when there is heightened uncertainty about forthcoming monetary policy action in the near future.

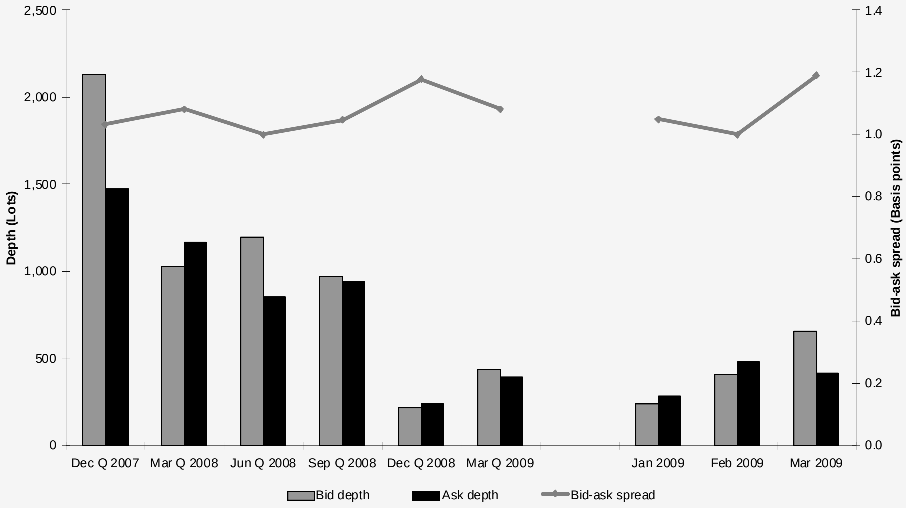
4. Trading Activity



The number of trades and volume transacted during day sessions in the second nearest expiry month contract decreased in the March quarter 2009 relative the same quarter of the previous year. The substantial low trades and volume witnessed in the months of January - March 2009 has attributed to the overall low levels in the March 2009 quarter. The average trade size during day sessions in second nearest expiry month *30 Day Interbank Cash Rate Futures* decreased from 160 lots in the March quarter 2008 to 69 lots in the March quarter 2009.

ASX 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 substantially in the March quarter 2009 relative to the same quarter of the previous year. There were an average of 440 lots available at the bid and 394 lots available at the offer during the March 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 remained at the minimum tick (1 basis point) in the March quarter 2009, representing AUD28.92 or 0.3 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

	Dec Q 2007	Mar Q 2008	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jan 2009	Feb 2009	Mar 2009
Mean of $\|R_{AP} - R_{cash}\|$									
Weekly (%)	0.008	0.009	0.007	0.012	0.042	0.026	0.028	0.033	0.009
Daily (%)	0.004	0.004	0.004	0.006	0.013	0.009	0.014	0.008	0.006
Standard deviation of $(R_{AP} - R_{cash})$									
Weekly (%)	0.013	0.011	0.010	0.015	0.049	0.025	0.024	0.032	0.008
Daily (%)	0.005	0.005	0.005	0.008	0.021	0.014	0.021	0.011	0.007

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 March 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.

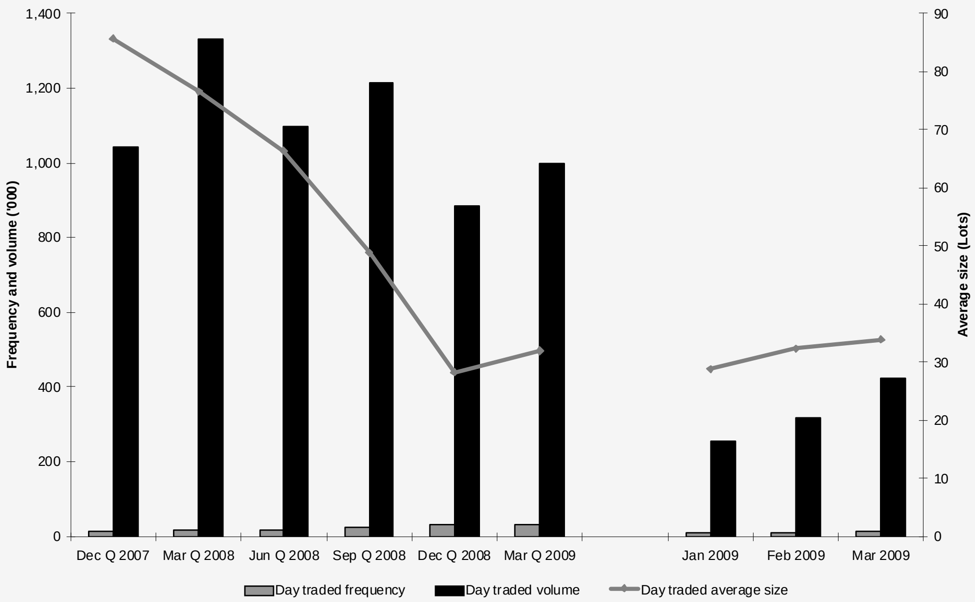
ASX 90 DAY BANK ACCEPTED BILL FUTURES

3. Volatility

	Dec Q 2007	Mar Q 2008	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jan 2009	Feb 2009	Mar 2009
Standard deviation of return									
Weekly (%)	0.015	0.031	0.012	0.021	0.128	0.042	0.043	0.041	0.027
Daily (%)	0.007	0.012	0.009	0.015	0.038	0.017	0.018	0.016	0.016
Average range (Index points)									
Monthly	0.18	0.44	0.28	0.50	1.12	0.57	0.58	0.59	0.53
Weekly	0.11	0.18	0.14	0.20	0.49	0.27	0.24	0.29	0.29
Daily	0.05	0.08	0.07	0.09	0.17	0.12	0.11	0.12	0.13

Price volatility on the nearest expiry month contract increased in the March quarter 2009 relative to the same quarter of the previous year. The average daily price range of 12 basis points for the March quarter 2009 represents AUD286 of contract value or 28 percent of the initial margin effective from 19 February 2009. This higher daily price range suggests that there were improved profit-making opportunities for traders with a short-term (intraday) trading horizon.

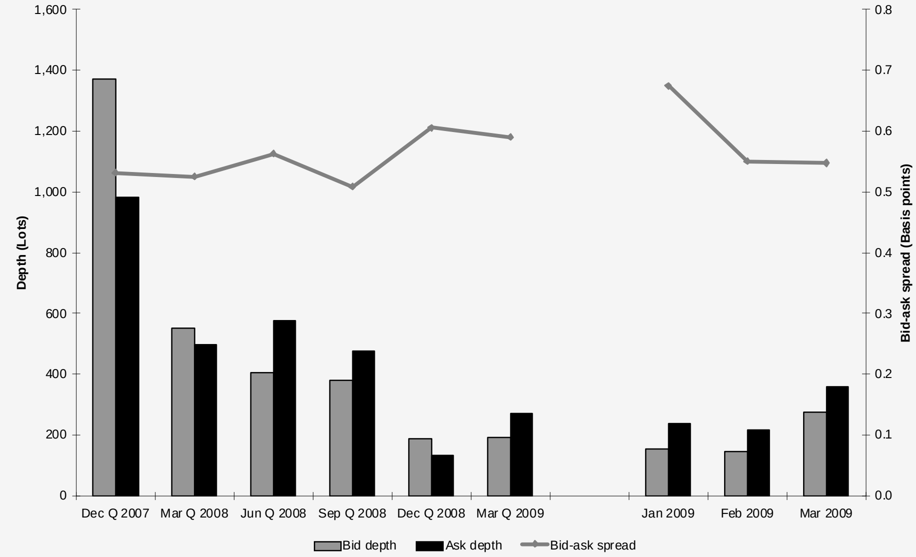
4. Trading Activity



The number of trades increased and volume transacted decreased during day sessions in the nearest expiry month contract in the March quarter 2009 relative the same quarter of the previous year. The average trade size during day sessions in nearest expiry month *90 Day Bank Accepted Bill Futures* decreased from 77 lots in the March quarter 2008 to 32 lots in the March quarter 2009.

ASX 3 YEAR TREASURY BOND FUTURES

1. Transaction Cost Indicators



The average market depth at the best quotes in the nearest expiry month contract decreased in the March quarter 2009 relative the same quarter of the previous year. There were an average of 192 lots available at the bid and 272 lots available at the offer during the March quarter 2009. This level of liquidity is still sufficient to accommodate trades much larger than the average size during day sessions (48 lots). The average bid-ask spread of 0.6 basis points in the March quarter 2009 represents AUD17.56. The cost of trading *3 Year Commonwealth Treasury Bond Futures* has been further reduced, even for trades much larger than the average size.

2. Tracking Error

	Dec Q 2007	Mar Q 2008	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jan 2009	Feb 2009	Mar 2009
Mean of $\lvert R_{AP} - R_{cash} \rvert$									
Weekly (%)	0.12	0.14	0.12	0.10	0.10	0.09	0.06	0.15	0.07
Daily (%)	0.03	0.04	0.03	0.04	0.05	0.04	0.04	0.05	0.03
Standard deviation of $(R_{AP} - R_{cash})$									
Weekly (%)	0.03	0.06	0.03	0.02	0.11	0.11	0.08	0.17	0.08
Daily (%)	0.02	0.05	0.03	0.05	0.08	0.05	0.05	0.06	0.04

AB2 Second nearest maturity basket bond underlying the *3 Year Treasury Bond Futures* contract

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 31 March 2009) ranged from 9 to 14 one-hundredths of one percent over the six quarters to March 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.

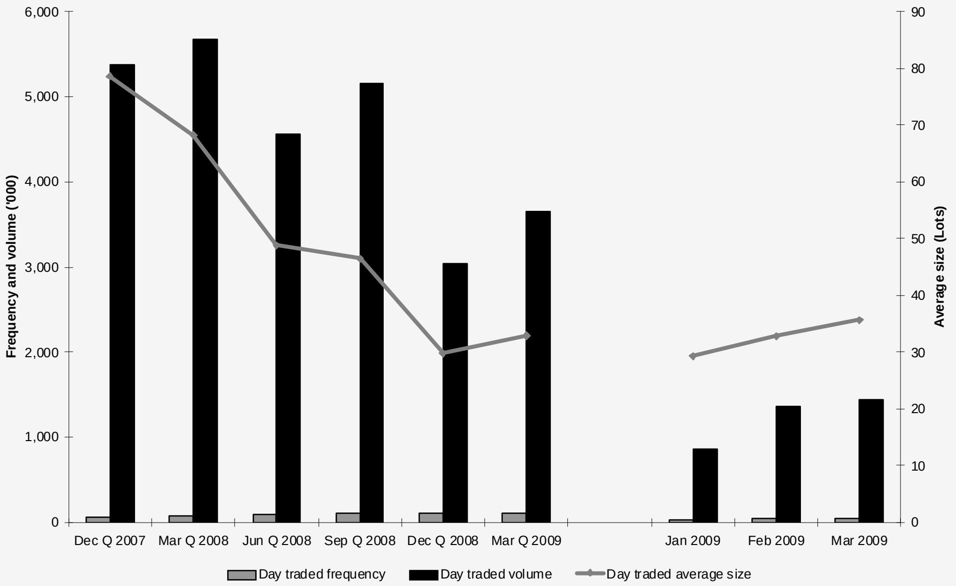
ASX 3 YEAR TREASURY BOND FUTURES (continued)

3. Volatility

	Dec Q 2007	Mar Q 2008	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jan 2009	Feb 2009	Mar 2009
Standard deviation of return									
Weekly (%)	0.37	0.48	0.45	0.27	0.70	0.65	0.41	0.80	0.78
Daily (%)	0.14	0.22	0.22	0.20	0.30	0.26	0.27	0.28	0.23
Average range (Index points)									
Monthly	0.47	0.58	0.55	0.64	0.92	0.66	0.72	0.62	0.65
Weekly	0.20	0.29	0.27	0.26	0.46	0.34	0.28	0.41	0.34
Daily	0.09	0.13	0.12	0.13	0.19	0.15	0.14	0.16	0.15

Price volatility measured by the standard deviation of daily returns on the nearest expiry month contract increased in the March quarter 2009 compared to the same quarter of the previous year. The average daily price range of 15 basis points for the March quarter 2009 represents AUD440 of contract value or 49 percent of the initial margin effective from 19 February 2009. A daily price range of this order of magnitude suggests that there are profitable opportunities for traders with a short-term (intraday) trading horizon.

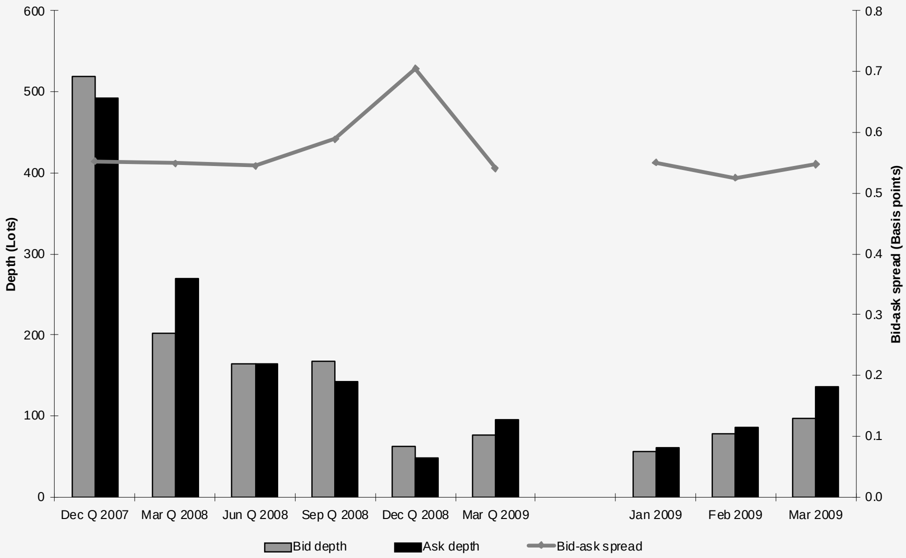
4. Trading Activity



The number of trades transacted during day sessions in the nearest expiry month contract remained at similar levels whilst volume decreased in the March quarter 2009 when compared to the same quarter of the previous year. The average trade size during day sessions in nearest expiry month *3 Year Commonwealth Treasury Bond Futures* decreased from 68 lots in March quarter 2008 to 33 lots in March quarter 2009.

ASX 10 YEAR TREASURY BOND FUTURES

1. Transaction Cost Indicators



The average market depth at the best quotes in the nearest expiry month contract decreased considerably in the March quarter 2009 relative to the same quarter of the previous year. There were an average of 77 lots available at the bid and 95 lots available at the offer during the March quarter 2009. This level of liquidity is sufficient to accommodate trades much larger than the average size during day sessions (20 lots). The average bid-ask spread remained close to the minimum tick (0.5 basis points) in the March quarter 2009, representing AUD47.50or 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

	Dec Q 2007	Mar Q 2008	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jan 2009	Feb 2009	Mar 2009
Mean of $\lvert R_{AP} - R_{cash}\rvert$									
Weekly (%)	0.14	0.15	0.16	0.10	0.32	0.08	0.05	0.07	0.13
Daily (%)	0.05	0.07	0.08	0.09	0.13	0.08	0.04	0.03	0.15
Standard deviation of $(R_{AP} - R_{cash})$									
Weekly (%)	0.09	0.14	0.11	0.12	0.43	0.09	0.05	0.09	0.16
Daily (%)	0.06	0.10	0.09	0.12	0.20	0.29	0.04	0.04	0.48

AB2 Second nearest maturity basket bond underlying the *10 Year Treasury Bond Futures* contract

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 31 March 2009) ranged from 8 to 32 one-hundredths of one percent over the six quarters to March 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 9 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.

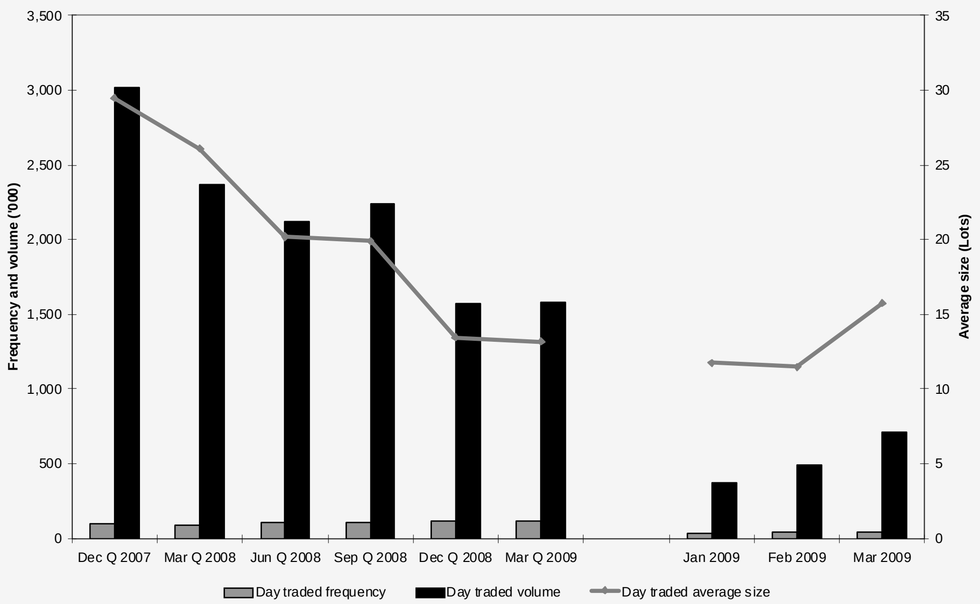
ASX 10 YEAR TREASURY BOND FUTURES (continued)

3. Volatility

	Dec Q 2007	Mar Q 2008	Jun Q 2008	Sep Q 2008	Dec Q 2008	Mar Q 2009	Jan 2009	Feb 2009	Mar 2009
Standard deviation of return									
Weekly (%)	0.96	1.06	0.83	0.58	1.77	1.55	1.10	1.96	2.13
Daily (%)	0.46	0.63	0.53	0.57	0.87	0.78	0.81	0.76	0.79
Average range (Index points)									
Monthly	0.45	0.53	0.45	0.50	0.81	0.53	0.52	0.49	0.59
Weekly	0.20	0.26	0.24	0.24	0.42	0.34	0.27	0.39	0.36
Daily	0.09	0.13	0.11	0.12	0.18	0.15	0.15	0.16	0.15

Price volatility measured by the standard deviation of daily returns on the nearest expiry month contract increased in the March quarter 2009 relative to the same quarter of the previous year. The average daily price range of 15 basis points for the March quarter 2009 represents AUD1,312 of contract value or 45 percent of the initial margin effective from 19 February 2009. 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 March quarter 2009 relative to the same quarter of the previous year, while the number of trades increased. The decline in volume occurred hand in hand with a decrease in the average trade size during day sessions in nearest expiry month *10 Year Commonwealth Treasury Bond Futures* from 26 lots in the March quarter 2008 to 16 lots in the March quarter 2009.

NOTES

CONTACT DETAILS

AUSTRALIA
Ken Chapman
General Manager, Interest Rates & New Markets
+61 2 9227 0094
ken.chapman@asx.com.au

Richard Murphy
General Manager, Equity Markets
+61 2 9227 0720
richard.murphy@asx.com.au

ASIA
Andrew Musgrave
Regional Manager, Asia
+61 2 9227 0211
andrew.musgrave@asx.com.au

EUROPE
James Keeley
Regional Manager, Europe
+44 20 3167 4784
james.keeley@asx.com.au

NORTH AMERICA
David Mitchell
Regional Manager, North America
Chicago:+1 312 788 3363
david.mitchell@asx.com.au

Head office ASX Limited
Exchange Centre
20 Bridge Street
Sydney NSW 2000 Australia

Telephone +61 2 9227 0000

www.asx.com.au