

MARKET INSIGHTS

Market Quality on the ASX and the  
Recovery from the Global Financial Crisis



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the University of Sydney, Australia*

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ASX

AUSTRALIAN SECURITIES EXCHANGE

## FOREWORD

In this 30th Edition of Market Insights, Dr. Andrew Lepone and Mitesh Mistry from the Discipline of Finance at the University of Sydney examine various aspects of market quality during and post the Global Financial Crisis. While market quality deteriorated during the GFC, it has rapidly returned to pre-crisis levels (or improved beyond them), highlighting the strength of the Australian market. I trust you will find it both interesting and useful when examining the opportunities that the ASX might present to your particular organisation.

Regards



Richard Murphy  
General Manager, Equity Markets  
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**ASX**

AUSTRALIAN SECURITIES EXCHANGE

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# Market Quality on the ASX and the Recovery from the Global Financial Crisis

*Dr Andrew Lepone and Steve Lecce*

## EXECUTIVE SUMMARY

The purpose of this report is to examine trends in various market quality measures on the ASX cash equity market over the period of October 2006 to October 2009 and to identify the extent to which these measures have improved after the peak of the GFC.

Overall, results of the analysis indicate that:

1. Volatility increased over the sample period, largely attributable to the GFC; however, volatility levels returned to pre-crisis levels in 2009.
2. While bid-ask spreads widened considerably during the GFC, spreads have returned to approximately pre-crisis levels.
3. Quoted depth remained relatively stable during the GFC, and has increased significantly since 2009.
4. Trends in trading activity suggest that while trade size has been decreasing, there has been a significant increase in the number of trades executed (and thus overall trading activity).

Overall, market quality has rapidly returned to (improved beyond) pre-crisis levels.

## STUDY METHODOLOGY

To assess the impact of the GFC on market quality, various liquidity and volatility measures are calculated. The data is sourced from Reuters and contains information on the price and volume of every on-market transaction executed for all listed stocks, together with prevailing bid and ask quotes. To examine the impact of the GFC on trading activity, the following two measures are calculated:

- Average trade size, calculated as the average dollar value per trade
- Trade frequency, calculated as the average number of trades executed per stock per day

To examine changes in market quality, the following four measures are calculated:

- Proportional Bid-Ask Spread =  $(\text{AskQuote} - \text{BidQuote}) / \text{QuoteMidpoint}$
- Best Depth = Volume of shares at prevailing bid and ask quotes
- Total Depth = Total volume of shares visible in the limit order book
- Volatility =  $\logarithm(\text{HighPrice} / \text{LowPrice})$

## STUDY FINDINGS

### 1. Volatility

Volatility increased over the sample period, largely attributable to the GFC; however, volatility levels have returned to pre-crisis levels in 2009.

#### EXHIBIT 1

#### Volatility (High Low)

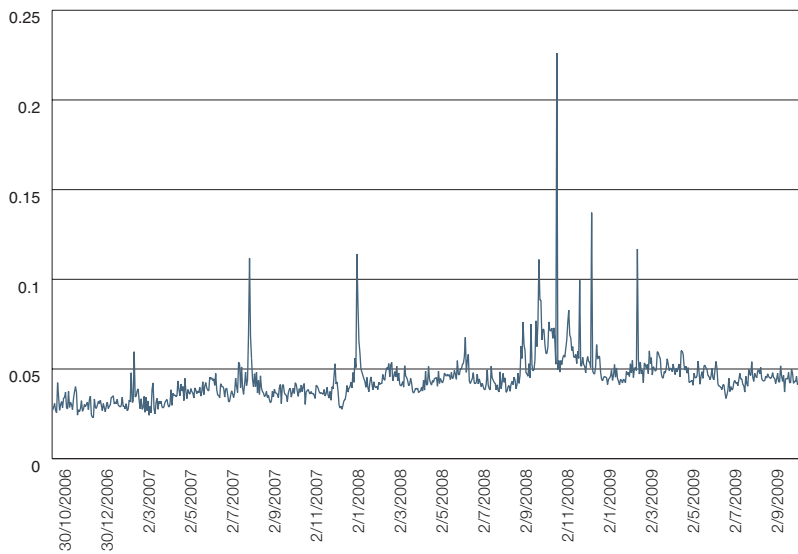


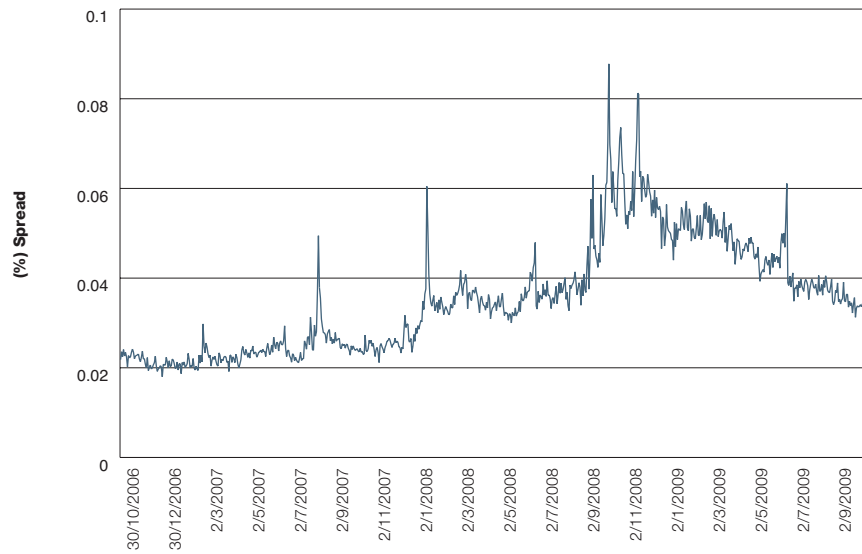
Exhibit 1 describes changes in volatility from October 2006 to October 2009. Volatility trended upwards during 2008, spiked at the height of the GFC, and then returned to pre-crisis levels, similar to the patterns exhibited by the bid-ask spread (see below). Overall, changes in volatility over the sample period are largely attributable to macro-economic conditions.

## 2. Bid-Ask Spreads

While bid-ask spreads widened considerably during the GFC, spreads have returned to approximately pre-crisis levels.

EXHIBIT 2

### Proportional Bid-Ask Spread



### 3. Quoted Depth

Quoted depth remained relatively stable during the GFC, and has increased significantly since 2009.

EXHIBIT 3

**Total Depth (Shares)**

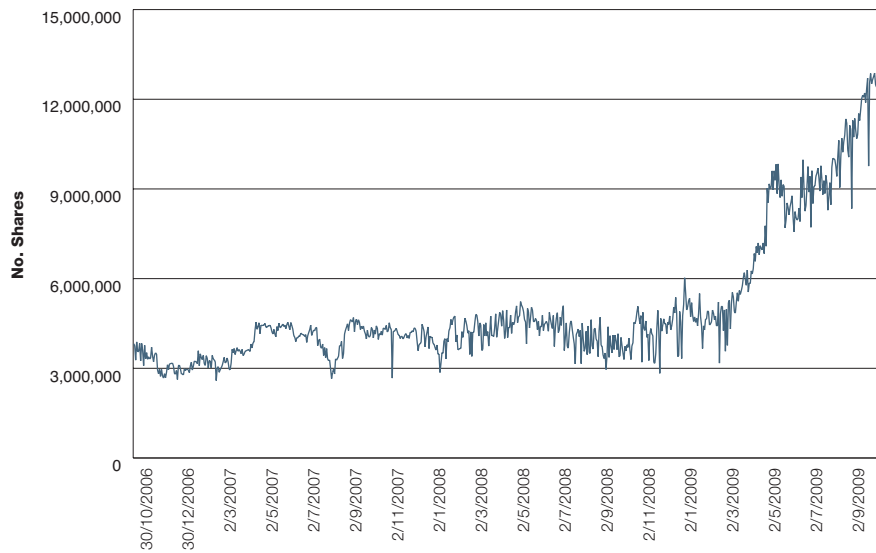
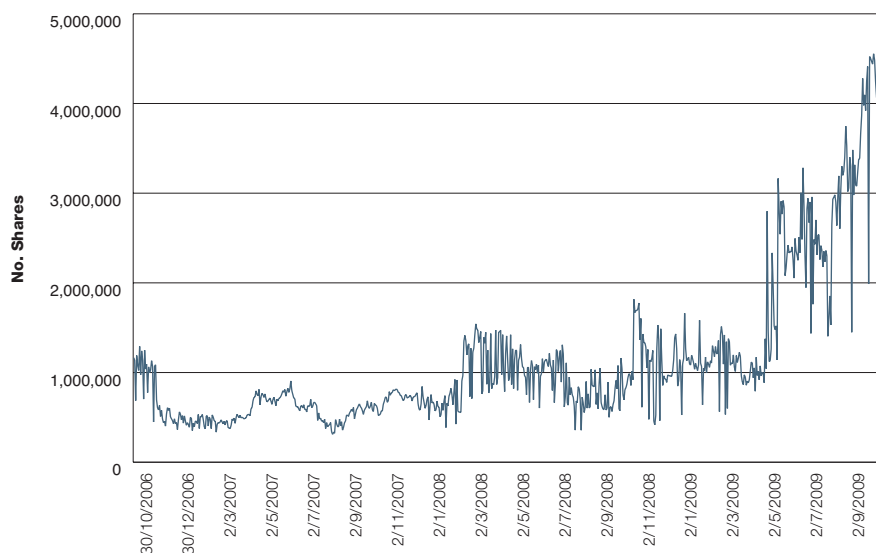


EXHIBIT 4

**Best Depth (Shares)**



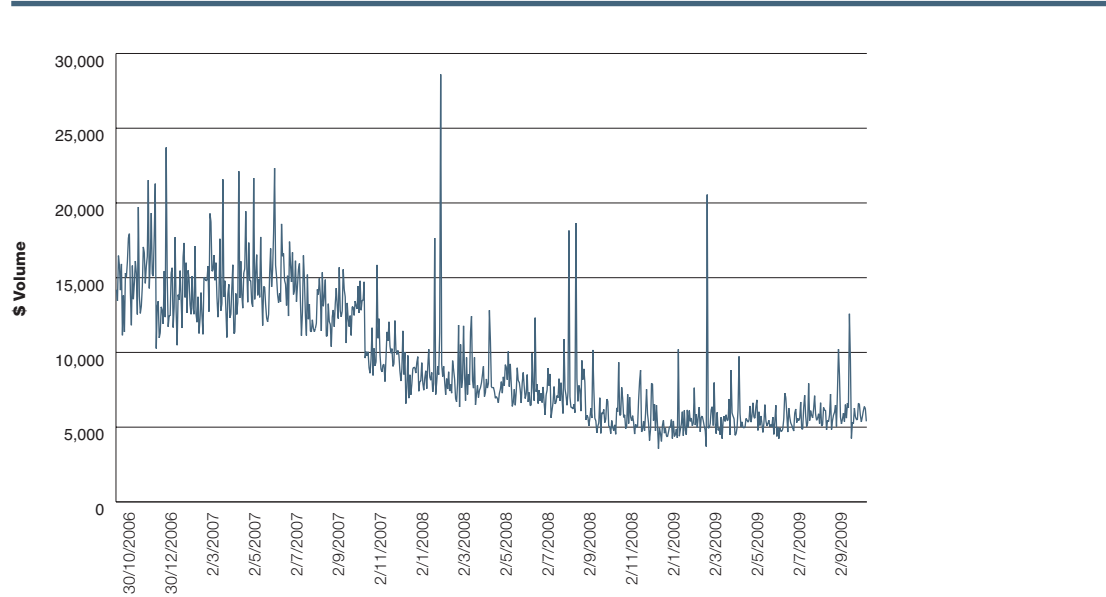
Exhibits 2, 3 and 4 describe changes in market quality from October 2006 to October 2009. Exhibit 2 shows that the proportional bid-ask spread has remained quite stable up until the beginning of the credit crisis in 2008. Starting from 2008, bid-ask spreads increased dramatically. This is expected, because during the height of the financial crisis, liquidity in global securities markets was severely affected. However, since the start of 2009, bid-ask spreads have steadily narrowed, returning to approximately pre-crisis levels. Both total depth (Exhibit 3) and best depth (Exhibit 4) remained relatively stable until the beginning of 2009, when depth started to trend upwards, increasing dramatically during 2009.

## 4. Trading Activity

Trends in trading activity suggest that while trade size has been decreasing, there has been a significant increase in the number of trades executed (and thus overall trading activity).

*EXHIBIT 5*

**Average Trade Size**



*EXHIBIT 6*

**Average Number of Trades Per Day Per Stock**

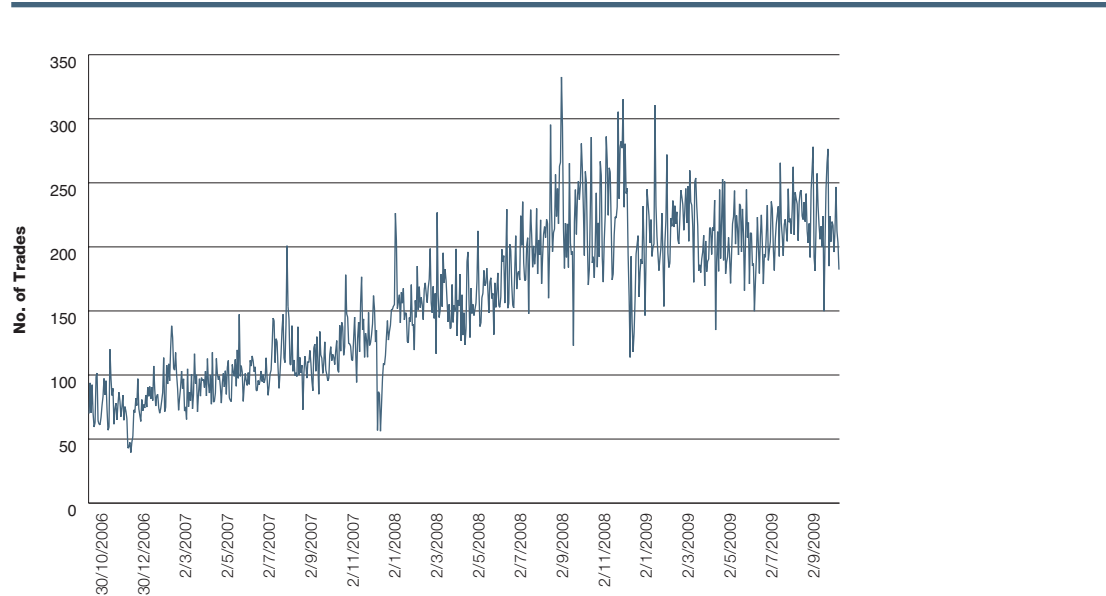


Exhibit 5 shows how trade size has changed during the sample period. From October 2006 to October 2009, there is a downward trend in the size of trades executed. Exhibit 6 depicts the pattern in trade frequency throughout the sample period. Contrary to the decline in trade size, trade frequency has steadily increased through time. Overall, trading activity has returned to approximately pre-crisis levels.

## CONCLUSION

Overall, this report finds evidence that market quality has improved on the ASX cash equity market post the GFC. Trends and spikes in bid-ask spreads, quoted depth and volatility do not follow any systematic pattern, but are most likely due to security market fluctuations and macroeconomic events. Market quality has rapidly returned to (improved beyond) pre-crisis levels.

## NOTES

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