The impact of market closures on option volumes at the ASX

The ASX extended the trading hours for exchange traded options but **ALLISTER KELLER**, **MAX STEVENSON** and **ELVIS JARNECIC** say that while trading volume has grown, this cannot be attributed to the change in trading hours.

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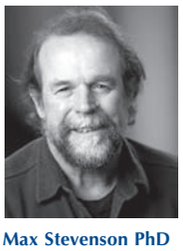

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With a view to increasing trading volumes and thereby improving market efficiencies, the ASX extended the trading hours of the exchange traded options market (ETO) by half an hour from 12.30pm to 1.00pm.

Using a sample of ETOs from 1 July 2003 to 27 July 2004 this article demonstrates that the addition of extra trading time on the ASX ETO market from 2 February 2004 was not the cause of a significant increase in trading volumes. The conclusion we make is that a reduction in what is already a short temporal trading halt to an even smaller trading break may be less important for the creation of increased average trading volume than the removal of the halt in its entirety.

Figure 1 depicts volumes before (pre-sample) and after (post-sample) the change in trading hours, as well as the ratio of the volumes before and after the structural change. While there was an increase in volumes post-sample as indicated by the almost constant vertical distance between the pre- and post-sample series, the question remains as to what part of that increase is attributable to the altered trading hours.

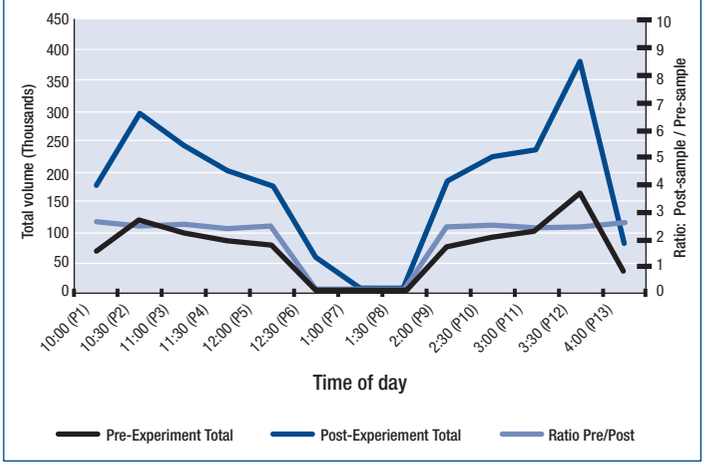
While several studies have examined the effect of overnight trading halts on market activity, only a few have examined intra-daily trading halts. As noted in Frino and Winn (2001), the lunchtime effect can be differentiated from information-driven closures due to its predictable timing. The lunchtime halt is a limited trading halt with less likelihood of pertinent information releases and associated price and volume volatility than what is likely overnight[1] (see Figure 1).

Market microstructure theory suggests that there should be increased trading immediately before a trading halt. In the post-sample period, Table 1 reports tests for the differences in the average volume traded in the newly created period before the lunch break (*P6*) with all other trading periods throughout the day.

Using a Wilcoxon Mann-Whitney test, we find a statistically significant difference (decrease) when compared to all other trading periods. A decrease in average trading volume prior to the lunch break was unexpected according to market micro-structure theory.

We conclude that the addition of the extra trading period did not increase, or at least maintain, the same level of trading that existed prior to the change. Further, after considering the full sample period but excluding the newly created trading period in the post-sample period (*P6*), Table 2 reports test results for differences in the overall levels of average trading volumes in the pre- and post-sample periods across corresponding trading periods throughout the day.

FIGURE 1 **INTRA-DAILY OPTION AVERAGE TRADING VOLUME**



SAMPLE: From 1 July 2003 to 27 July 2004

Using a Wilcoxon test of the ratios of all other periods to that of the period prior to lunch (pre-sample) and the penultimate period before lunch (post-sample), the results indicate no statistical difference. We conclude that the observed overall increase in the average trading volume post-sample to that pre-sample (see Figure 2) was consistent across all comparable trading periods.

Periods throughout the day are defined by: *P1*=10:00am–10:30am, …, *P13*=4:00pm–4:30pm.

Average trading volume in any period, *i*, is given by *AV(Pi)*, where *i*=1, … , 6, 9, …, 13.

All tests are significant at the 1% level.

For the post-sample period only, and for those trading periods not including the two trading periods prior to the trading halt, results for tests of the differences in ratios formed by first dividing by *P6* and then by *P5* are summarised in Table 3. Differences in these ratios capture the relative importance to the market of the two trading periods, *P5* and *P6*.

The results confirm a significant difference between the two ratios (Wilcoxon Paired Sign-Rank test), enabling us to conclude that the newly created trading period *(P6)* was not as important to the market as was *P5*, the pre-trading halt period before the change.

Overall, while it is clear that the ETO market grew significantly for the period under review, it is highly unlikely that this growth can be attributed to the extra trading period created by reducing the length of the lunchtime trading halt.

This conjecture is supported by the statistical evidence from the test results in Tables 1 to 3. Not only was there a minimal amount of average trading volume executed during that period relative to others throughout the day, but the reduced length of the trading halt did not translate into increased average volume traded before and after the break as suggested by market microstructure theory.

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References

Brock, W., and Kleidon, A. (1992), "Periodic market closure and trading volume", *Journal of Economic Dynamics and Control* Vol 16 pp451–489.

Chordia, T., Roll, R., and Subrahmanyam, A. (2001), "Market liquidity and trading activity", *Journal of Finance* Vol 56 pp501–530.

Frino, A., and Winn, R. (2001), "The impact of lunchtime closure on market behaviour: evidence form the Sydney futures Exchange", *Accounting and Finance* Vol 41 pp25–40.

Note

[1] The effects of overnight market closure have been studied by such researchers as Brock and Kleidon (1992) and Chordia, Roll, and Subrahmanyam (2001). J

FIGURE 2

Table 1	
2 February 2004 – 27July 2004 (POST-SAMPLE)	**Z**
AV(P1) – AV(P6)	-7.59
AV(P2) – AV(P6)	-9.26
AV(P3) – AV(P6)	-8.83
AV(P4) – AV(P6)	-8.28
AV(P5) – AV(P6)	-7.47
AV(P9) – AV(P6)	-8.42
AV(P10) – AV(P6)	-8.68
AV(P11) – AV(P6)	-8.56
AV(P12) – AV(P6)	-9.31
AV(P13) – AV(P6)	-2.53

Table 2	
30 June 2003 – 27 July 2004 (FULL SAMPLE)	**Z**
AV(P1)/AV(P5)	-2.11
AV(P2)/AV(P5)	-1.18
AV(P3)/AV(P5)	-1.587
AV(P4)/AV(P5)	-1.23
AV(P9)/AV(P5)	-0.651
AV(P10)/AV(P5)	-1.56
AV(P11)/AV(P5)	-0.42
AV(P12)/AV(P5)	-1.431
AV(P13)/AV(P5)	-1.66

Table 3	
2 February 2004 – 27 July 2004 (POST SAMPLE)	**Z**
AV(P1)/AV(P6) – AV(P1)/AV(P5)	-6.997
AV(P2)/AV(P6) – AV(P2)/AV(P5)	-7.065
AV(P3)/AV(P6) – AV(P3)/AV(P5)	-7.292
AV(P4)/AV(P6) – AV(P4)/AV(P5)	-7.411
AV(P9)/AV(P6) – AV(P9)/AV(P5)	-7.33
AV(P10)/AV(P6) – AV(P10)/AV(P5)	-7.262
AV(P11)/AV(P6) – AV(P11)/AV(P5)	-7.383
AV(P12)/AV(P6) – AV(P12)/AV(P5)	-7.35
AV(P13)/AV(P6) – AV(P13)/AV(P5)	-7.221