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Volatility, Price-Discovery and Trading Volume in Australian Equity

Index and Option Markets

A dissertation presented in partial fulfilment of the requirements for

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To

My dear wife Aileen and sons Michael and Thomas.

This dissertation is completed with their love and encouragement.

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Abstract

This dissertation investigates the information considerations of volatility, price-discovery and the relationship change in volume and volatility resulting from index derivatives transactions on financial markets in Australia.

The impact of information on volatility was investigated in the essay one, as volatility is a key factor for accurately pricing derivative securities. I assessed the forecast accuracy, unbiasedness and information content of volatility forecasts, based on implied volatility and conditional volatility models for the S&P/ASX 200 Index Options market in Australia. The conditional volatility models produce the most accurate forecasts and are robust when forecasting into short time horizons.

Essay two, investigates the information content of the index and option markets in the price-discovery process. Based on the above volatility results, the long-run equilibrium relationship between the share price index and the implied price of the share-price-index option was investigated. Causality was determined to show which market leads the other. Information share measures were used to gauge the contribution of the share price index and index option markets to the price-discovery process. Unambiguous evidence shows the index market leads the options market and the former contributes more to price-discovery than the latter.

In essay three, I investigate the dynamic relationship between the future price volatility of the S&P/ASX 200 Index and the trading volume of the S&P/ASX 200 Index Options to explore the informational role of option volume in predicting price volatility. I found the contemporaneous call options volume have a significant strong

positive feedback effect on the implied volatility, but the contemporaneous feedback effect of volume on the TARCH volatility is insignificant. The contemporaneous feedback effects from the implied volatility and the TARCH volatility to the call options volume are positive, significant and strong.

Table of Contents

Abstract	iii
Table of Contents	v
Tables	viii
Table of Figures	x
1 Volatility, Price-discovery and Trading Volume in Australian Equity Index and Options Markets	1
1.1 Introduction	1
1.2 Outline of this Dissertation	3
1.3 Organisation of this Dissertation	5
1.4 Contribution of this Dissertation	6
2 The Australian Index and Option Markets	8
2.1 Introduction	8
2.2 The Australian Index Market	10
2.3 Standard & Poor's Assumes Control of the Index Calculation Process	12
2.4 The Australian Options Market	15
2.5 S&P/ASX 200 Index Options	16
3 Forecasting Stock Market Volatility and Assessing Information Content Present in S&P/ASX 200 Index Options Prices	21
3.1 Introduction	21
3.2 Literature Review	24
3.3 Data and Methodology	29
3.3.1 Data Sample	29
3.3.2 Methodology	29
3.3.3 Linear and Non-Linear GARCH Models	31
3.3.4 Forecast Error Statistics	33
3.3.5 The Information Content of Implied Volatility	36
3.4 Results	38
3.4.1 Descriptive Statistics	38
3.4.2 Stationarity Testing	42
3.4.3 Volatility Model Estimation	43
3.5 Evaluation of Error Measurement Statistics	48
3.5.1 Evaluation of Unbiasedness Test Results	51
3.5.2 Evaluation of Efficiency Test Results	53
3.6 Conclusion	55

3.7	Appendices	59
3.7.1	Appendix: Linear and Non-Linear ARCH and GARCH Models	59
3.7.2	Appendix: Correlogram of ACF and PACF on S&P/ASX 200 Return Series	65
3.7.3	Appendix: Correlogram of ACF and PACF of S&P/ASX 200 Squared Return Series	66
3.7.4	Appendix: ARCH LM Test on S&P/ASX 200 Return Series	67
3.7.5	Appendix: Correlogram of ACF and PACF of S&P/ASX 200 Residuals Squared	69
3.7.6	Appendix: GARCH (3, 1) Model on S&P/ASX 200 Return Series	70
3.7.7	Appendix: GARCH (3, 1) Model on S&P/ASX 200 Return Series	71
3.7.8	Appendix: GARCH (3, 1) - M Model on S&P/ASX 200 Return Series	72
3.7.9	Appendix: TARARCH (3, 1) Model on S&P/ASX 200 Return Series	73
3.7.10	Appendix: Correlogram of Standardised Residuals Squared of TARARCH (3,1) Model	74
3.7.11	Appendix: EGARCH (1, 1, 1) Model on S&P/ASX 200 Return Series	75
4	Lead/lag Direction and Price-Discovery of the S&P/ASX 200 Share Price Index and the S&P/ASX 200 Index Options	76
4.1	Introduction	76
4.2	Literature Review	80
4.3	Data and Methodology	95
4.3.1	Data	95
4.3.2	Methodology	97
4.4	Results	105
4.4.1	Descriptive Statistics	106
4.4.2	Stationarity Testing	108
4.4.3	Co-Integration Tests	110
4.4.4	Engle-Granger Co-integration	110
4.4.5	Johansen Co-integration	111
4.4.6	Vector Error-Correction Model and Granger Causality	113
4.4.7	Price Discovery	117
4.4.8	Impulse-Response Analysis	119
4.4.9	Robustness of the Results	121
4.5	Conclusion	128
4.6	Appendices	130
4.6.1	Appendix: Stationarity and Unit Root Tests	130
4.6.2	Appendix: Co-integration	133
4.6.3	Appendix: Error-Correction Model (ECM) and Causality	135
4.6.4	Appendix: Price-discovery Process	139
4.6.5	Appendix: Impulse-Response Functions	145
5	The Informational Role of Options Trading Volume in the Australian Index Options Markets	146
5.1	Introduction	146
5.2	Literature Review	148
5.3	Data and Methodology	156

5.3.1	Data	156
5.3.2	Methodology	159
5.4	Results	166
5.4.1	Summary Statistics	166
5.4.2	Stationarity Testing	166
5.4.3	Regression Results for the S&P/ASX 200 Options Volume and Volatility Series	168
5.4.4	Regression Results for the S&P/ASX 200 Options Market Activity and Volatility Series	173
5.4.5	Regression Results for the S&P/ASX 200 Options Volume and Volatility Series by Moneyness Classes: Near-the-Money Options.	177
5.4.6	Regression Results for the S&P/ASX 200 Options Market Activity and Volatility Series by Moneyness Classes: Near-the-Money Options	181
5.4.7	Regression Results for the S&P/ASX 200 Options Volume and Volatility Series by Moneyness Classes: In-the-Money Options	185
5.4.8	Regression Results for the S&P/ASX 200 Options OMA and Volatility Series by Moneyness Classes: In-the-Money Options	188
5.4.9	Regression Results for the S&P/ASX 200 Options Volume and Volatility Series by Moneyness Classes: Out-Of-the-Money Options	192
5.4.10	Regression Results for the S&P/ASX 200 Options Market Activity and Volatility Series by Moneyness Classes: Out-Of-the-Money Options	195
5.5	Conclusion	199
6	Conclusion	202
6.1	Major Findings and Implications	202
6.2	Future Areas of Research	207
7	Bibliography	210

Tables

Table 2-1 Contract Specifications S&P/ASX 200 Index Options	19
Table 3-1 Descriptive Statistics for the S&P/ASX 200 Return Series	41
Table 3-2 Augmented Dickey-Fuller Unit Root Tests for the S&P/ASX 200 Implied Index	42
Table 3-3 Model Selection and Parameter Estimation for the S&P/ASX 200 Index	44
Table 3-4 Forecast Performance Evaluated by RMSE & MAE Statistics	49
Table 3-5 Forecast Performance Evaluated by MAPE & Theil Statistics	49
Table 3-6 Forecast Performance Evaluated by (DM-LS) Statistics	50
Table 3-7 Unbiasedness Tests of Volatility Forecasts	52
Table 3-8 Orthogonality Tests of Implied Volatility	54
Table 4-1 Annotated Bibliography of Empirical Studies on Lead/Lag Relations between Equity Index and Options Markets	86
Table 4-2 Augmented Dickey-Fuller Unit Root Tests for the S&P/ASX 200 Index and S&P/ASX 200 Implied Index	109
Table 4-3 Phillips-Perron Unit Root Tests for the S&P/ASX 200 Index and S&P/ASX 200 Implied Index	109
Table 4-4 Engle-Granger Co-integration Tests and Co-integration Vectors Results for the S&P/ASX 200 Index and S&P/ASX 200 Implied Index	110
Table 4-5 Johansen Co-integration Test for the S&P/ASX 200 Index and S&P/ASX 200 Implied Index	112
Table 4-6 Vector Error-correction Results for the S&P/ASX 200 Index and S&P/ASX 200 Index Options	114
Table 4-7 Results for the S&P/ASX 200 Index and S&P/ASX 200 Implied Index	118
Table 4-8 Johansen Co-integration Test for the S&P/ASX 200 Index and S&P/ASX 200 Implied Index	123
Table 4-9 Vector Error-correction Results for the S&P/ASX 200 Index and S&P/ASX 200 Index Options	124
Table 4-10 Results for the S&P/ASX 200 Index and S&P/ASX 200 Implied Index	126
Table 5-1 Summary Statistics for the S&P/ASX 200 Index Options Data	166
Table 5-2 Augmented Dickey-Fuller Unit Root Tests for the S&P/ASX 200 Index Options Volume and Volatility Series	167

Table 5-3 Phillips-Perron Unit Root Tests for the S&P/ASX 200 Index Options Volume and Volatility Series	168
Table 5-4 Regression Results for the S&P/ASX 200 Options Volume and Volatility Series	169
Table 5-5 Regression Results for the S&P/ASX 200 Options Market Activity and Volatility Series	174
Table 5-6 Regression Results for the S&P/ASX 200 Options Volume and Volatility Series by Moneyness Classes: Near-the-Money Options	178
Table 5-7 Regression Results for the S&P/ASX 200 Options Market Activity and Volatility Series by Moneyness Classes: Near-the-Money Options	182
Table 5-8 Regression Results for the S&P/ASX 200 Options Volume and Volatility Series by Moneyness Classes: In-the-Money Options	186
Table 5-9 Regression Results for the S&P/ASX 200 Options Market Activity and Volatility Series by Moneyness Classes: In-the-Money Options	189
Table 5-10 Regression Results for the S&P/ASX 200 Options Volume and Volatility Series by Moneyness Classes: Out-of-the-Money Options	193
Table 5-11 Regression Results for the S&P/ASX 200 Options Market Activity and Volatility Series by Moneyness Classes: Out-Of-the-Money Options	196

Table of Figures

Figure 2-1 Turnover on ASX (Equities) and Volume in ASX Options	18
Figure 2-2 Turnover and Volume of S&P/ASX 200 Index Options (XJO)	18
Figure 3-1 Patterns of Daily Closing Prices of the S&P/ASX 200 Index	39
Figure 3-2 Patterns of Daily Closing Log S&P/ASX 200 Index Returns	40
Figure 4-1 Patterns of Daily Closing Prices of the S&P/ASX 200 Index and S&P/ASX 200 Implied Index	107
Figure 4-2 Patterns of Daily Closing Prices of the LOG S&P/ASX 200 Index and the Log S&P/ASX 200 Implied Index	107
Figure 4-3 Shocks to daily closing prices of the S&P/ASX 200 Index and S&P/ASX 200 Implied Index	120
Figure 5-1 Impulse-Response Function of the S&P/ASX 200 Options Volume and Implied Volatility/TARCH Volatility Series	172
Figure 5-2 Impulse-Response Function of the S&P/ASX 200 Options Market Activity and Implied Volatility/TARCH Volatility Series	176
Figure 5-3 Impulse-Response Function of the S&P/ASX 200 Options Volume and Volatility Series by Moneyness Classes: Near-the-Money Options	180
Figure 5-4 Impulse-Response Function of the S&P/ASX 200 Options Market Activity and Volatility Series by Moneyness Classes: Near-the-Money Options	184
Figure 5-5 Impulse-Response Function of the S&P/ASX 200 Options Volume and Volatility Series by Moneyness Classes: In-the-Money Options	187
Figure 5-6 Impulse-Response Function of the S&P/ASX 200 Options Market Activity and Volatility Series by Moneyness Classes: In-the-Money Options	191
Figure 5-7 Impulse-Response Function of the S&P/ASX 200 Options Volume and Volatility Series by Moneyness Classes: Out-of-the-Money Options	194
Figure 5-8 Impulse-Response Function of the S&P/ASX 200 Options Market Activity and Volatility Series by Moneyness Classes: Out-Of-the-Money Options	198
Figure 6-1 Key dates related to the S&P/ASX 200 Index Options (XJO)	209

