What Explains ASX 200 Index Volatility? Evidence from Domestic Macroeconomic Indicators and Global Market Performance

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Literature Review

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- Hasan and Ratti (2012) studied the effect of oil shock on the return and volatility of ASX 200 index. GARCH-M model is introduced, and the conditional mean equation of returns is consisted of its own lag, old price return, oil price return volatility, and the conditional volatility measure of returns. [3]

Model Specification: GRACH

Mean Equation

$$r_{a,t} = c + u_{a,t}, \quad u_{a,t} \sim N(0, \sigma^2_{a,t})$$

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Variance Equation

$$\sigma^2_{a,t} = \beta_0 + \beta_1 u^2_{a,t-1} + \beta_2 \sigma^2_{a,t-1} + \gamma_1 Voltwi_t + \gamma_2 Volbond_t + \gamma_3 Volune_t + \theta_1 Volftse_t + \theta_2 Volnik_t + \theta_3 Volsp_t + w_t$$

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Variance Equation (VECH)

$$vech(\boldsymbol{H_t}) = \boldsymbol{M} + \boldsymbol{A} vech(\boldsymbol{u_t u_t'}) + \boldsymbol{B} vech(\boldsymbol{H_{t-1}})$$

Results: GARCH model

Table: GARCH(1,1) with Exogenous Variables

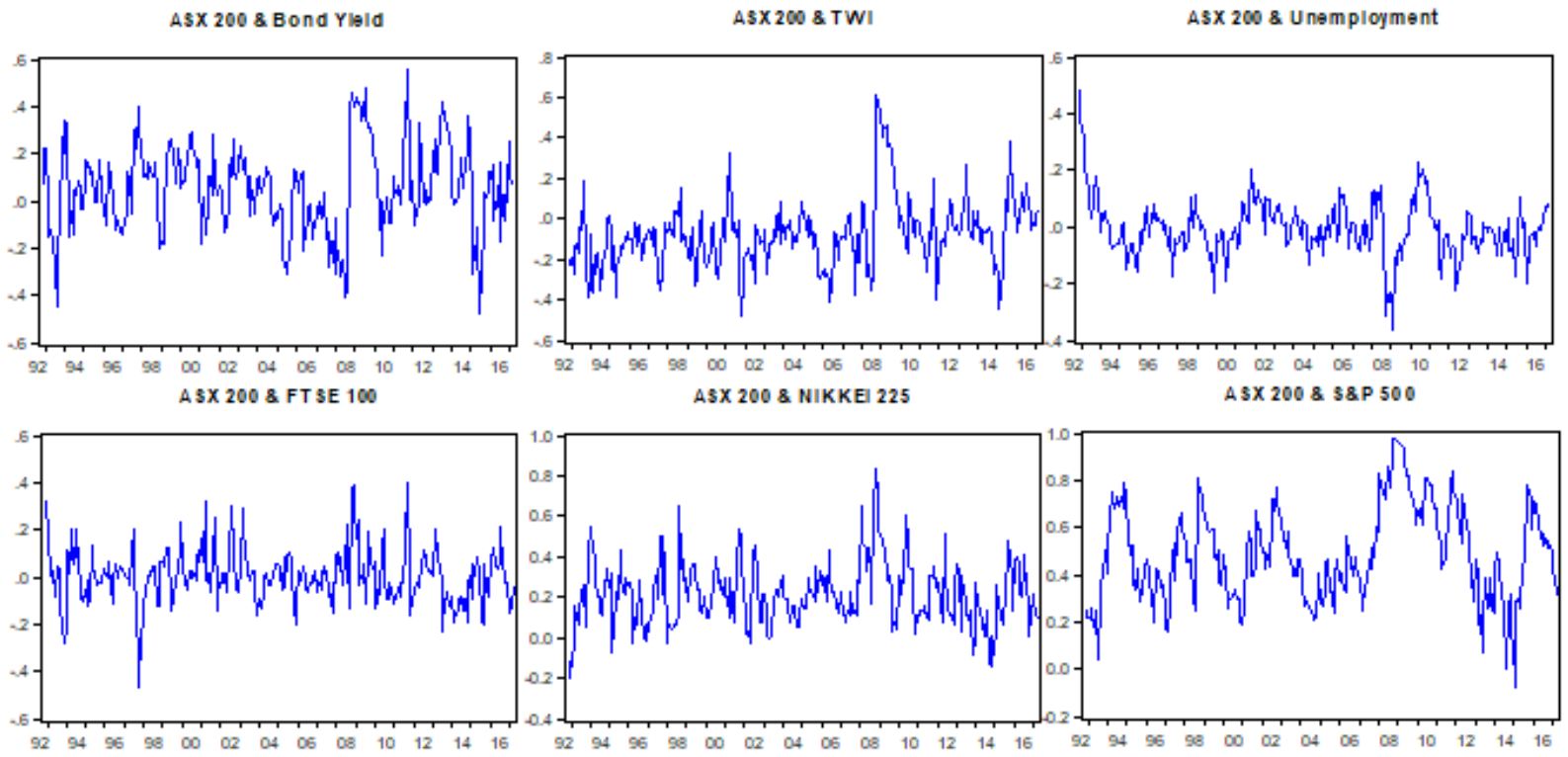
	variable	coefficient	t-statistic
mean equation	Constant	0.766*	4.705
variance equation	Constant	3.638*	8.761
	$Resid^2$	0.035	1.542
	GARCH(-1)	1.012*	41.10
	TWI	0.038*	0.400
	Bond	-0.027*	3.284
	Unemploy	0.001	0.126
	FTSE 100	-0.064*	2.294
	Nikkei 225	-0.107*	11.16
	S&P 500	0.029*	1.981

Results: MGARCH model

Table: MGARCH coefficients for ASX 200 Index

index	variables	M	A1	B1
(1)	ASX 200	1.875	0.144*	0.713*
(2)	Bond	0.017	0.150*	0.703*
(3)	TWI	-0.215	0.148*	0.657*
(4)	Unemployment	-0.022	0.071	0.723*
(5)	FTSE 100	-0.054	0.127*	0.578
(6)	NIKKEI 225	0.722	0.147	0.512*
(7)	SP 500	0.161	0.165*	0.772*

Results:MGARCH model



Suggestions and Limitations

- Other variables such as VIX, CPI, material price index can be included if data is available.

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- Over-identification should not be a problem in this case.
- What is your thought?

References


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