

Referee Report for the paper, Stock returns and implied volatility: A VAR approach (MS786)

The authors try to use a new VAR model (a structure VAR with the restriction that positive and negative shocks have the same magnitude with an opposite sign), which is considered in Lee (2010), to analyse the relationship between stock returns and implied volatility. They claim that their study detects negative, and in particular asymmetric relationships. After my reading of this paper, I think that their contribution is debatable and their analysis is unclear. Thus, my recommendation is rejecting the paper for the potential publication.

It is well known that the return and the volatility of stocks are negatively correlated and their relationship is stronger in periods with negative returns than in periods with positive return. The only potential contribution of the paper is to quantify this asymmetric relationship in a better and robust way. The only evidence that the authors provided in this regard is the plot of impulse responses of volatility to positive and negative shocks of return in Pane B of Figure 1 and 2. No confidence intervals qualifying significance of the responses are shown. No estimates of the structural VAR model itself are shown. Are the coefficients significant? Do their signs make sense? How do the residuals behaviour? Is the specified VAR model a good model for the considered data of return and volatility? How do the results in this paper shed light on the issue at hand in a better manner comparing to the existing literature?

Moreover, the paper is written in an unclear fashion, which requires the effort of readers to understand. Without looking at the model specification in Lee (2010) I cannot understand the methodology since the description in the paper is not even correct. On page 3, the authors write that $b_{11}^0 + b_{11}^0 = 0$, which is the identifying restriction assuming positive and negative shocks have the same magnitude with an opposite sign. This is the central piece of the methodology. However, it is wrongly specified. The correct restriction from Lee (2010) shall be $b_{11}^0 + b_{12}^0 = 0$. And the most important results of the impulse response from negative and positive shocks are depicted in an unclear way. There is no notation for which response is from which shock in Figure 1 and 2. As a reader I have to make a deduction by myself.