Volatility Efficiency on HK Market

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Hang Seng Index (HSI) and Hang Seng China Enterprise Index (HSCEI) have the same nature in formulation and both are widely accepted broad based indicator for Hong Kong market performance. Both indices adopt a free float-adjusted market capitalisation weighted methodology and there is a reasonable amount of common constituent shares. The latter index tracks the mainland China elements through H-share listings in Hong Kong while the former covers the largest and most liquid shares in the Hong Kong stock market. Since there is great deal of commonality in the two indices, the volatility of the two indices should relate and co-move interdependently to each other. This paper investigates the efficiency of such relative volatility behaviour by testing the profitability of a simple trading strategy on the two index options.

The evidence of long memory or mean reversion characteristics on both HSI and HSCEI indices was observed through a simple regression model to test the implied volatility ratio. Over the period from 2005 to 2014, there is a consistent pattern of mean reversion behaviour which is similar to [Chow, Lam and Yeung 2008]'s findings of a more rigorous approach. In testing the co-movement, this paper adopts the method used by [Dao and Wolters 2008] to test for volatility co-movement. A high correlation of the two volatility series was observed as well as evidence of common stochastic trends.

Similar to [Poon and Pope 2000]'s study on US market, the testing of relative volatility relationship is by using a simple trading strategy on HSI and HSCEI index option to exploit the relative volatility ratio (or volatility spread) abnormality between HSI and HSCEI. The trading strategy is based on the difference between the implied volatilities ratio and historic volatility bounds with a 95% confidential interval. A trade is triggered as soon as the implied volatility ratio violates the upper or lower volatility bound. The trading rule is then simply "buy low sell high strategy" i.e. to purchase (sale) of relatively cheap (expensive) options in proportions to the VEGA ratio. The net DELTA position of the trade should be zero to reduce the unwanted directional risk. Other trading criteria and market fiction condition were imposed to produce a more realistic and robust outcome. The result shows such trading strategy from 2005 to 2014 period to be profitable, in general, even with the inclusion of abnormal period during the "subprime crash" in 2008. The result of such trading strategy strongly suggests the HSI and HSCEI index options are not efficient.
Reference


