Abstract

The variance risk premium (VRP) is defined as the difference between the forecast of return variance (volatility) under the risk neutral measure and that under the physical measure. Recent empirical evidence suggests that the VRPs of stock indexes predict the excess return of those indexes but it is not true for the Nikkei 225 stock index in Japan. This paper re-examines the stock return predictability of the VRP of the Nikkei 225 index by predicting the volatility under the physical measure based on the monthly data on the index of industrial production (IIP) in Japan as well as the daily return of the Nikkei 225 index while only financial data such as daily return, realized volatility and model-free implied volatility are used in the previous literature. The monthly and daily data are combined by employing the GARCH-MIDAS model where the daily volatility is divided into the monthly component that depends on the past monthly data on the IIP and the daily component that follows a GARCH model. The Japanese volatility index (VXJ) published by the Center of the Study of Finance and Insurance at Osaka University is used as the forecast of volatility under the risk neutral measure. It is demonstrated that the new variance risk premium of the Nikkei 225 index estimated in this paper predicts the excess return. It is also found that the movement of stock market volatility is counter-cyclical in Japan, which is consistent with the finding in the U.S.

JEL classification: C22, C53, C58, E32, G17.

Keywords: GARCH-MIDAS, index of industrial production, Nikkei 225, stock return predictability, variance risk premium.