Predictability of Excess Bond Premium and Variance Risk Premium for Business Cycles and Recession Risk

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Abstract

Excess bond premium (EBP) is a component of credit spreads that is not attributable to expected default risk. It has attracted attention as a predictor for business cycles and recession risk. Variance risk premium (VRP) is the difference between the conditional variance of future returns under the risk neutral measure and that under the physical measure. It also predicts business cycles in Japan while it does not in the US. This article compares the predictability of EBP with that of VRP for the composite index of business conditions, the index of industrial production and the unemployment rate in Japan as well as the likelihood of an Economic and Social Research Institute (ESRI)-dated recession occurring over the next 3 and 12 months. EBP is calculated using the credit spreads of corporate bonds in Japan. The Japanese volatility index (VXJ) published by Osaka University is used for the conditional variance of Nikkei 225 stock index under the risk-neutral measure. The conditional variance of Nikkei 225 stock index under the physical measure is calculated using some models such as GARCH models with daily returns and models for the realized variance calculated using high-frequency data. Empirical results show that VRP performs best when the conditional variance under the physical measure is calculated using the extended heterogeneous autoregressive (HAR) model where the monthly log realized volatility is a linear function of the continuous and jump components of past daily, weekly and monthly log realized volatilities as well as the terms taking account of financial leverage and it performs better than EBP in the both business cycles and recession risk predictions in Japan.

Key words: Business cycles, Excess bond premium, Heterogeneous autoregressive model, High-frequency data, Implied volatility, Predictability, Realized variance, Recession risk, Variance risk premium

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