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STATE-DEPENDENT VOLATILITY FEEDBACK EFFECT IN THE ICAPM

Abstract:

The volatility feedback effect is an important component of the risk-return tradeoff in the heteroskedastic asset returns, referring to the negative correlation between asset prices and the unexpected component of return volatility. It implies that an unanticipated volatility shock causes an increase in the expected risk premium, which in turn leads to an immediate decrease in asset prices. While a great deal of literature has examined the pricing of the changes in expected volatility in the simple risk-return relation, relatively little attention has been paid to the volatility feedback effect in the Intertemporal Capital Asset Pricing Model (ICAPM). We suggest that the state-dependent volatility feedback effect plays an important role in the risk-return tradeoff in the sense that the rational risk-averse investors revise their expectation in response not only to the change in expected volatility but also to the change in unexpected volatility. We conjecture that under a positive risk-return relation, an unanticipated high (low) volatility shock perceived by rational risk-averse investors causes an increase (decrease) in market risk premium, which in turn leads to an immediate decrease (increase) in asset prices.

In this paper, we explore the volatility feedback effect in the ICAPM in resolving the following three issues. First, the full intertemporal risk-return tradeoff is driven by both the return-expected volatility relation and the return-unexpected volatility relation. Thus, the conventional risk-return relation that is estimated with no consideration of volatility feedback effect represents only the partial risk-return tradeoff. Second, while the return-expected volatility relation is induced by the unexpected return changes, the return-unexpected volatility relation is caused by the internally generated unexpected volatility changes. This implies that the risk source of the two return-volatility relations is completely different from each other, such that the two relations should not be evaluated or estimated interchangeably. Third, the estimation of the volatility feedback effect is always subject to the endogeneity issue due to the currency of the contemporaneous volatility changes in estimation. It is indeed almost impossible to resolve this endogeneity issue unless a new econometric methodology to estimate the contemporaneous unexpected volatility changes is developed.

We contribute to the current knowledge of the risk-return tradeoff by shedding a light on the state-dependency of the volatility feedback in the ICAPM. In addition, our empirical results reveal evidence to support the notion that the asymmetric volatility feedback effect is attributable to the well-known puzzle of a negative correlation between the concurrent volatility and a lagged return. We therefore conclude that the volatility feedback effect plays an important role in the intertemporal risk-return tradeoff by inducing an increase or a decrease in the expected market risk-premium under various market conditions.

Keywords:

Asset price, the Intertemporal Capital Asset Pricing Model (ICAPM), the volatility feedback effect

JEL Classification: G12, G11