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ABSTRACT

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Abstract

The risk management of financial institutions has gained global visibility after the financial disasters in early 1990s. Moreover, government bonds have been conceived as a secure investment. However, this has been changed in consequence of European sovereign debt crisis. In response to the increased market risks, the Basel Committee on Banking Supervision has required banks to measure their market risk exposure using Value at Risk (VaR). VaR is a widely used measure of unexpected loss at some chosen confidence level. VaR has been studied widely; nevertheless, the majority of VaR research has been focused on stocks and currencies while there is not much research on bonds. This thesis studies the performance of most commonly used VaR methods for government bonds. Furthermore, the thesis studies the performance of the VaR methods under debt crisis.

This thesis studies VaR estimates for government bonds using the delta-normal, historical simulation and Monte Carlo method. Backtesting is based on unconditional and conditional coverage, which also accounts for the clustering of erroneous VaR estimates. The empirical research is carried out by studying 10-year government bonds of Finland, Germany, Greece, Ireland, Italy, Portugal and Spain, where the bonds of Finland and Germany represent stable bonds and the bonds of the rest of above-mentioned countries represent volatile bonds. Furthermore, the evaluation of the VaR estimates is conducted in 2009 in normal market conditions and in 2010 in volatile market conditions as a result of European sovereign debt crisis.

The results of this thesis imply that most commonly used VaR methods provide rather good estimates in general when market movements are normal. When market movements are extreme, daily VaR estimates, for which volatility is estimates using equally weighted moving average, have some predictive performance. However, the acceptable performance of the VaR estimates is rejected for most of the estimates under debt crisis, especially when the backtesting framework takes into account the clustering of erroneous VaR estimates. Hence, the results illustrate the importance of stress testing in risk management.

Key words	Value at Risk, government bond, debt crisis, market risk
Further information	