

# Chapter 4

## Conclusions

In this research, if  $S_i(t)$ ,  $i = 1, 2, \dots, m$  are comonotonic, then, under actual probability measures in Black-Scholes model, the risk measures of portfolio based on general strictly concave distortion functions,  $VaR_\alpha(\cdot)$ ,  $TVaR_\alpha(\cdot)$  and risk measures based on Wang's distortion function are not monotone increasing as time  $t$  increases. However under risk neutral probability measures, these risk measures of portfolio are consistent with time.

These results show that for computing financial risk measures of portfolio, we should use risk neutral distributions rather than actual distributions of the stock process. But then, a practical problem arises: We might have historical data on stocks, which came from the actual probability distributions, how can we use such data to infer about the risk neutral distribution in order to estimate the risk measure? What can we do if stocks in the portfolio are not comonotonic? Problems surrounding these important issues will be the objectives of our future research.