Chapter 5

Conclusion

5.1 Conclusion

In financial market, there are many approaches to evaluate the Value at Risk of the asset return, such as Variance-covariance, Historical simulation, Extreme Value Theory. The asset price return has fluctuated all the time depending on the extreme events namely Stock price, Derivatives price, Commodity price, etc. Most asset prices are not usually a normal return distribution. They are quite a tailed-distribution of return. Since, Variance-covariance and Historical simulation are failed to fit a tail distribution. Therefore, Extreme Value Theory is the right method to analysis Value at Risk of assets because it can overcome this problem.

The most interesting commodity asset in this decade is gold, because gold price has been increasing all the time. Gold is a major asset in terms of investment all over the world because it has served as one of the most stable monetary standards which have played a crucial role in the global economy.

This study investigates the estimation a value at risk of gold price return. Empirical research reveals that value of gold price return when modeled after Generalized Extreme Value (GEV) is 3.0234%. This implies that, the extreme loss in every year will exceed to 3.0234% with 1% risk. It means that if we invest $1 US million in gold return, we are 99% confident that our daily loss at worst will not exceed $30,234 US. In other word, we are 1% confident that our loss return will exceed 3.0234% or $30,234 US if we have an investment of $1 US million in that market.

Second, it is shown that the Generalized Pareto Distributions (GPD) corresponds to the tails of the return distributions well. Estimation of tails at 0.999 percentile with 99 percent confidence interval show that it is possible to observe over

4.0228% loss in one day and an expected shortfall is 4.8071% in a single day. It means that if we invest $1 million US dollar in gold price, we are 99% confident that the daily loss in 1-day period will not exceed to $40,228 US. In other words, we are 1% confident that our daily loss will exceed $40,228 US during one trade days. Expected shortfall is 4.8071% in a single day. As well as if we invest $1 million in gold, we are 99% confident that the daily average amount loss over the 99th percentile of the loss distribution is $48,071 US.

Actually, in term of VaR estimation, the result of GEV and GPD can be different. The value of GPD can be more or less than GEV. Wei Zhang (2005) found that VaR estimates from GEV are much larger than VaR estimates from other models. Since when choosing a large block size to fit GEV to the standardized maximum distribution, there is a big loss of observations in the data set. The problem of VaR estimation based on GEV is that a large sample of data is required. On the one hand, sufficiently large block size is required, so that the limiting result of the Fisher-Tippett Theorem may be taken as exact. On the other, a large block size also decreases the number of maximum observations drawn from the raw data set. There should be a balance between choosing a large block size, and yet keeping enough maxima data points for the VaR estimation.

The conclusion of this paper is that the Extreme Value Theory is a desirable statistical tool in analyzing the extremely loss return of gold. Although the results from 2 different methods are quite similar, GPD gives a more accurate result for Value at Risk. Since GPD is more modern approach to extreme events and it uses more data for estimation. It is also separated the data estimation of the left and right tail distribution to fit in with the model.

5.2 Recommendation

Further research will be divided into two parts: prior to the financial crisis in 2008 (Leman Brother) and post 2008 following crisis estimate Value at Risk of Gold price return. Also, the study will focus in both negative and positive return to compare the results.