

Variance-Covariance Method and the Historical method to Measure Value at Risk of a Portfolio: A Case Study on Sri Lanka Stock Exchange

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In this study two different methods are used to measure and compare Value at Risk (VaR) of four different portfolios. Twenty securities which are used to calculate S&P 20 SL index in Colombo Stock Exchange were used to construct four different portfolios each worth Rs.100,000. Data was obtained from Colombo Stock Exchange during the period of 1st of January 2012 to 30th of September 2016. Four portfolios were constructed using the securities with the mean closing prices: less than Rs.100, Rs.100 - Rs.200, Rs.200 - Rs.300 and greater than Rs.300. Equally weighted VaR models were constructed for selected portfolio securities. Value at Risk is calculated using two different methods namely the Variance-Covariance method and the Historical method at three different significant levels. Variance-Covariance method calculates Value at Risk as a multiple of the standard deviation of the portfolio. Historical method calculates Value at Risk using an ordered array of the daily profit/loss. When making decisions about a portfolio it is best to make decisions by considering the maximum loss that can be expected when investing in a particular portfolio. The study concluded that the Monte Carlo method as the best method to calculate Value at Risk of a portfolio at 90% and 95% level of significance while Historical method is the best method to calculate Value at Risk of a portfolio at 99% level of significance. Further it could be seen that the portfolio that constructed using the securities with mean closing prices between Rs.100 and Rs.200 gives the lowest Value at Risk value and the portfolio that is constructed using the securities with mean closing prices above Rs.300 gives the highest Value at Risk value.

Keywords: Historical method, Value at risk, Variance covariance method