VaR on CMS Stock

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Outline

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Definition of VaR

- Value at Risk (VaR) is a measure of the risk of investments. It estimates how much a set of investments might lose, given normal market conditions, in a set time period such as a day. VaR is typically used by firms and regulators in the financial industry to gauge the amount of assets needed to cover possible losses.

- VaR is defined as: for a given portfolio, time horizon, and probability p, the p VaR is defined as a threshold loss value, such that the probability that the loss on the portfolio over the given time horizon exceeds this value is p. This assumes mark-to-market pricing, and no trading in the portfolio.

- Mathematical definition:
$$VaR_\alpha(L) = inf\{l \in \Re : P(L > l) \leqslant 1 - \alpha\}$$
$$= inf\{l \in \Re : F_L(l) \geqslant \alpha\}$$

Our Project

- Apply Value at Risk Technics Using Delta Normal Method to Share of China Merchants Securities Co. Ltd.(CMS) Listed in the Shanghai Securities Exchange,China(Trading code: 600999).

- Used Algorithm:
  VaR by Delta Normal Method with RMA and EMA.

- Selected Data:
  Daily Closing Price of CMS from January 4,2010 to July 8,2016.

- Output:
  VaR Analysis Results by RMA and EMA Estimating Methods Respectively.
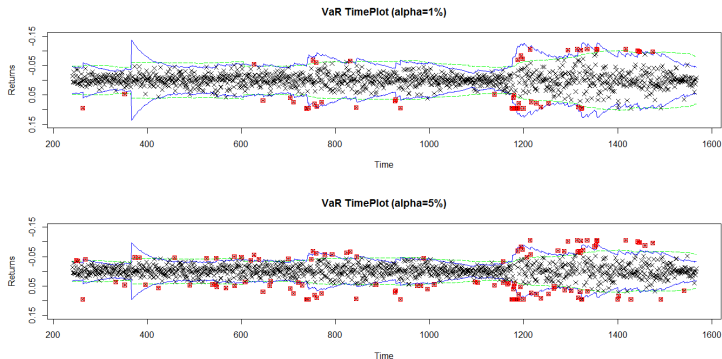
The Result

- VaR on CMS Stock

Figure: Observed changes of the portfolio values (dots) Lt . Predicted VaRs based on RMA (dashed line) and EMA (solid line) at 5% and 1%

Project Items

- The original data is saved as $CMS.txt$ which includes Daily Closing Price of CMS Stock from January 4,2010 to July 8,2016.
- The code of R is save as $VaRtoCMSStock.R$ for functional implementation of VaRs based on RMA and EMA.
- The result is plotted as the png file $VaRtoCMSStock.png$ as to show the predicted VaRs based on RMA and EMA.
- The meta information is save as $metainfo.txt$ following the instructions from **Styleguide-and-FAQ**.

Thank You!