

Alberto Andrés Valdés González.

Degree: Mathematical Engineer.

Work position: Data Scientist.

Mail: anvaldes@uc.cl/alberto.valdes.gonzalez.96@gmail.com

Location: Santiago, Chile.

ARCH and GARCH

The both models are used to predict the **volatility**.

ARCH

If we define $\eta_t = \epsilon_t^2 - \sigma_t^2$ the model ARCH can be represented by:

$$\epsilon_t^2 = a_0 + \sum_{j=1}^p a_j \cdot \epsilon_{(t-j)}^2 + \eta_t$$

With $\{\epsilon_t^2\} \sim AR$ and $\{\eta_t\} \stackrel{\text{iid}}{\sim} D(0, \sigma^2)$.

GARCH

$$Y_t = c + \epsilon_t$$

$$\epsilon_t = Z_t \cdot \sigma_t$$

$$\sigma_t^2 = a_0 + \sum_{j=1}^p a_j \cdot \epsilon_{(t-j)}^2$$

With $\{Z_t\} \stackrel{\text{iid}}{\sim} D$.
