Innovations versus measurement errors

Modeling Intensinve Longitudinal Data

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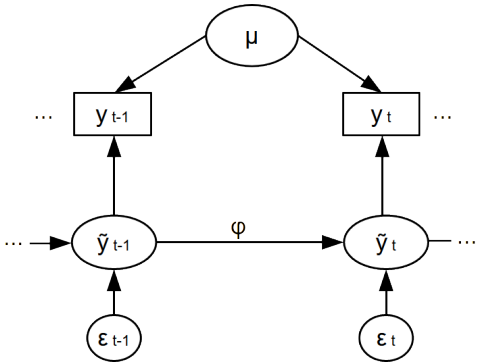
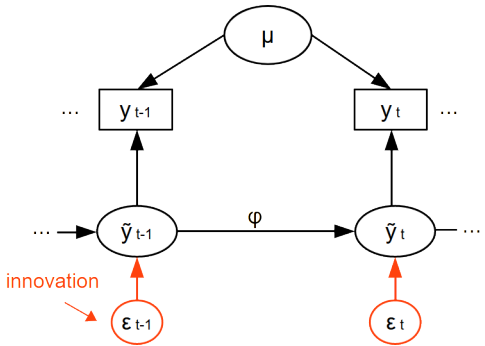
Autoregressive model



$$y_t = \mu + \tilde{y}_t$$
$$\tilde{y}_t = \phi \tilde{y}_{t-1} + \epsilon_t$$

$$\epsilon_t \sim N\left(0, \sigma^2\right)$$

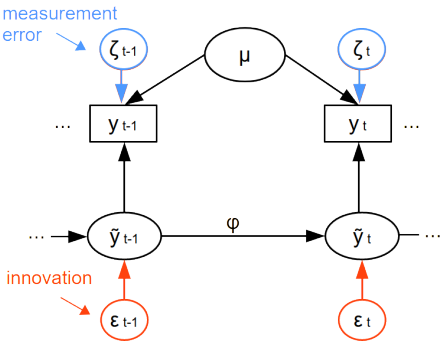
Autoregressive model: Innovations



$$y_t = \mu + \tilde{y}_t$$
$$\tilde{y}_t = \phi \tilde{y}_{t-1} + \epsilon_t$$

$$\epsilon_t \sim N\left(0, \sigma^2\right)$$

Autoregressive model with measurement errors



$$y_t = \mu + \tilde{y}_t + \zeta_t$$
$$\tilde{y}_t = \phi \tilde{y}_{t-1} + \epsilon_t$$

$$\zeta_t \sim N\left(0, \omega^2\right)$$
$$\epsilon_t \sim N\left(0, \sigma^2\right)$$

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