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SP-GARCH Model Notes

Model Specification

The SP-GARCH model is

$$
\begin{aligned}
r_t &= \mu + y_t \\
y_t &= \sigma_t \varepsilon_t \\
\sigma_t^2 &= \omega + g(\varepsilon_{t-1})\sigma_{t-1}^2
\end{aligned}
$$

where $\varepsilon \sim F_{\text{std},\nu}$ is the standardised t distribution with ν degrees of freedon. This is related to the regular t distribution via

$$
z = \sqrt{\frac{\nu - 2}{\nu}}x \tag{1}
$$