TALL SOM FORTELLER

Model selection in KVARTS

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Scientific criteria for model selection

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- The laughing test

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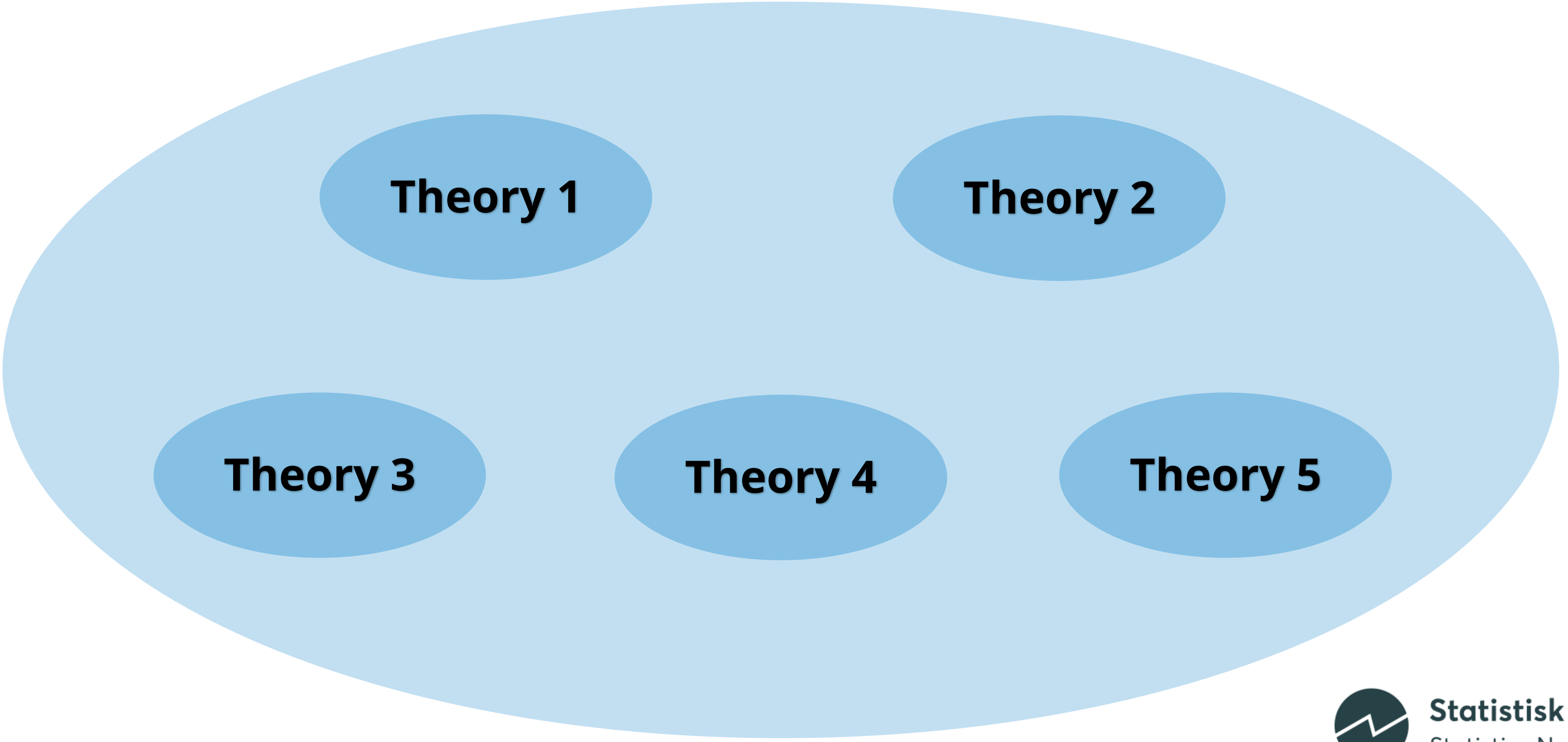
- Econometric model nesting several economic theories

Encompassing econometric model



Example: Consumption

- A Keynesian consumption function $$c_t = \beta_y y_t + \beta_w w_t$$
- A set of Euler equations
  - Precautionary savings and intertemporal substitution $$E_t \Delta c_{t+1} = \phi + \sigma R_t$$
  - Rule of thumb consumers $$E_t \Delta c_{t+1} = (1-\mu)\phi + \mu \Delta y_t + (1-\mu)\sigma R_t$$
  - Habit formation $$E_t \Delta c_{t+1} = \varpi_1 \Delta c_t + \varpi_2 \hat{r}_t$$

Example: A nested CVAR

$$\begin{pmatrix} \Delta c_t \\ \Delta y_t \\ \Delta w_t \end{pmatrix} = \begin{pmatrix} \alpha_c \\ \alpha_y \\ \alpha_w \end{pmatrix} [c_{t-1} - \beta_y y_{t-1} - \beta_w w_{t-1}]$$

$$+ \sum_{j=1}^{k-1} \begin{pmatrix} \gamma_{j,11} & \gamma_{j,12} & \gamma_{j,13} \\ \gamma_{j,21} & \gamma_{j,22} & \gamma_{j,23} \\ \gamma_{j,31} & \gamma_{j,32} & \gamma_{j,33} \end{pmatrix} \begin{pmatrix} \Delta c_{t-j} \\ \Delta y_{t-j} \\ \Delta w_{t-j} \end{pmatrix}$$

$$+ \psi R_{t-1} + \vartheta + \Phi D_t + \epsilon_t,$$

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Example: testable restrictions

- Keynes consumption function restrictions

$$\begin{aligned}\Delta c_t &= \alpha_c[c_{t-1} - \beta_y y_{t-1} - \beta_w w_{t-1}] \\ &+ \sum_{j=1}^{k-1} \begin{pmatrix}\gamma_{j,11} & \gamma_{j,12} & \gamma_{j,13}\end{pmatrix} \begin{pmatrix}\Delta c_{t-j} \\ \Delta y_{t-j} \\ \Delta w_{t-j}\end{pmatrix} \\ &+ \psi_c R_{t-1} + \vartheta_c + \Phi_c D_t + \epsilon_{ct}.\end{aligned}$$

$$0 < -\alpha_c < 1$$
$$0 \leqslant \alpha_y, \alpha_w < 1$$

- Consumption Euler equation restrictions

$$E_t \Delta c_{t+1} = \sum_{j=1}^{k-1} \gamma_{j,11} \Delta c_{t+1-j} + \gamma_{1,12} \Delta y_t + \psi_c R_t + \vartheta_c + \Phi_c D_{t+1}$$

$$\alpha_c = \alpha_w = 0 \quad \beta_y = 1 \quad \gamma_{j,12} = 0 \ \forall\ j \neq 1$$

$$0 < \alpha_y < 1 \quad \beta_w = 0 \quad \gamma_{j,13} = \gamma_{j,21} = \gamma_{j,22} = \gamma_{j,23} = \gamma_{j,31} = \gamma_{j,32} = \gamma_{j,33} = 0\ \forall\ j$$

Example: NKPC

- Encompassing model for inflation dynamics

$$\Delta p_t = \varphi_1 E_t \Delta p_{t+1} + \varphi_2 \Delta p_{t-1} + \varphi_3 \Delta ulc_t + \varphi_4 \Delta uic_t - \varphi_5 eqcm_{t-1} + \varphi_6$$

- Econometric procedure documented in
  - Boug, P., Cappelen, Å., & Swensen, A. R. (2010). The new Keynesian Phillips curve revisited. *Journal of Economic Dynamics and Control*, *34*(5), 858–874.
  - Boug, P., Cappelen, Å., & Swensen, A. R. (2017). Inflation Dynamics in a Small Open Economy. *Scandinavian Journal of Economics*, *119*(4), 1010–1039.
  - Mavroeidis S, Plagborg-Møller M, Stock JH (2014). Empirical Evidence on Inflation Expectations in the New Keynesian Phillips Curve. *Journal of Economic Literature,* 52(1):124-188.

Friendly advice

Be specific about what scientific criteria you use for model selection - put it in writing