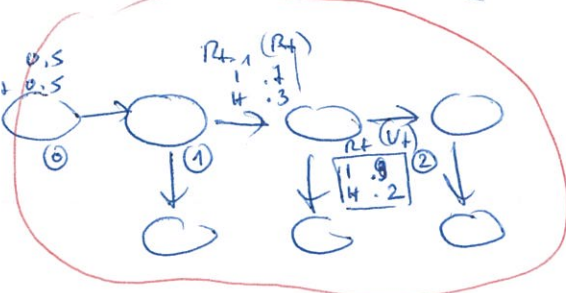


$$P(X_{t+1} | e_{1:t+1}) = P(X_{t+1} | e_{1:t}, e_{t+1}) = \alpha P(e_{t+1} | X_{t+1}, e_{1:t}) P(X_{t+1} | e_{1:t}) \quad (1)$$

$$= \alpha \underbrace{P(e_{t+1} | X_{t+1})}_{\text{finites}} \underbrace{P(X_{t+1} | e_{1:t})}_{\text{dynamisch}} \underbrace{\sum_{X_t} P(X_{t+1} | X_t, e_{1:t}) P(X_t | e_{1:t})}_{\text{summe}}$$

aus
elementen

$$\sum_{X_t} P(X_{t+1} | X_t, e_{1:t}) P(X_t | e_{1:t})$$



Elemente: $0 \rightarrow 1$

$$P(R_1) = \sum_{r_0} P(R_1 | r_0) P(r_0) = \begin{bmatrix} .7 \\ .3 \end{bmatrix} \begin{bmatrix} .5 \\ .5 \end{bmatrix} = \begin{bmatrix} .35 \\ .15 \end{bmatrix} = \begin{bmatrix} .5 & R_1=1 \\ .5 & R_1=H \end{bmatrix}$$

de 1. und 2. Evidenz: $U_1 = \text{lgm}$

finites: $P(R_1 | U_1) = \alpha P(U_1 | R_1) P(R_1)$

$$\propto \begin{bmatrix} .9 \\ .2 \end{bmatrix} \begin{bmatrix} .5 \\ .5 \end{bmatrix} = \propto \begin{bmatrix} .45 \\ .1 \end{bmatrix} = \begin{bmatrix} .45 \\ .55 \end{bmatrix} = \begin{bmatrix} .818 \\ .182 \end{bmatrix}$$

2. und 3. Evidenz: $U_2 = \text{lgaz}$

Elemente: $1 \rightarrow 2$

$$P(R_2 | U_1) = \sum_{r_1} P(R_2 | r_1) P(r_1 | U_1) = \begin{bmatrix} .7 \\ .3 \end{bmatrix} \begin{bmatrix} .818 \\ .182 \end{bmatrix} = \begin{bmatrix} .627 \\ .373 \end{bmatrix}$$

finites:

$$P(R_2 | U_1, U_2) = \alpha P(U_2 | R_2) P(R_2 | U_1) = \propto \begin{bmatrix} .9 \\ .2 \end{bmatrix} \begin{bmatrix} .627 \\ .373 \end{bmatrix} = \propto \begin{bmatrix} .565 \\ .075 \end{bmatrix} = \begin{bmatrix} .883 \\ .117 \end{bmatrix}$$

Elemente:

$$P(R_3 | U_1, U_2) = \sum_{r_2} P(R_3 | r_2) P(r_2 | U_1, U_2) = \begin{bmatrix} .7 \\ .3 \end{bmatrix} \begin{bmatrix} .883 \\ .117 \end{bmatrix} = \begin{bmatrix} .6532 \\ .3468 \end{bmatrix}$$

$$P(R_4 | U_{1:2}) = \sum_{r_3} P(R_4 | r_3) P(r_3 | U_{1:2}) = \begin{bmatrix} .7 \\ .3 \end{bmatrix} \begin{bmatrix} .6532 \\ .3468 \end{bmatrix} = \begin{bmatrix} .56128 \\ .43872 \end{bmatrix}$$

$$P(R_5 | U_{1:2}) = \sum_{r_4} P(R_5 | r_4) P(r_4 | U_{1:2}) = \begin{bmatrix} .7 \\ .3 \end{bmatrix} \begin{bmatrix} .56128 \\ .43872 \end{bmatrix} = \begin{bmatrix} .5245 \\ .4755 \end{bmatrix}$$

