

19.1

$$K_t = E_{t|t-1} B_t^T (B_t E_{t|t-1} B_t^T + N_t^y)^{-1}$$

$$\begin{aligned} \text{as } N_t^y \rightarrow 0 \quad K_t &= E_{t|t-1} B_t^T (B_t E_{t|t-1} B_t^T + N_t^y)^{-1} \\ &\approx E_{t|t-1} B_t^T (B_t E_{t|t-1} B_t^T)^{-1} \\ &= E_{t|t-1} \cancel{B_t^T B_t^{-1}} E_{t|t-1}^{-1} B_t^{-1} \\ &= \cancel{E_{t|t-1} E_{t|t-1}^{-1}} B_t^{-1} \\ &= B_t^{-1} \end{aligned}$$

$$\begin{aligned} E_{t,t} &= (I - B_t^{-1} B_t) E_{t|t-1} \\ &= (\cancel{I} - I) E_{t|t-1} \\ &= 0 \end{aligned}$$