επιθυμητό: $S(n,\theta)$

$$y(n,\theta) = x(n,\theta) * [h_0, h_1] = x(n,\theta)\cdot h_0 + h_1\, x(n-1,\theta)\cdot h_1$$
$$= x_n^t(\theta)\cdot \underline{h}$$

$$\min_h E\,\| S(n,\theta) - x_n^t(\theta)\,\underline{h}\,\|^2 =$$

$$= E\Big[\ \underline{h}^t\, x_n^t(\theta)\cdot x_n(\theta)\,\underline{h} + S^2(n,\theta) - 2\,S(n,\theta)\,x_n^t(\theta)\,\underline{h}\ \Big] =$$

$$= \underline{h}^t\, E\big[x_n^T(\theta)\,x_n(\theta)\big]\cdot \underline{h} + \underbrace{E\big[S^2(n,\theta)\big]}_{\text{ανεξάρτητο } h} - 2\,E\big[S(n,\theta)\,x_n^T(\theta)\big]\cdot h \longrightarrow$$

$S \to W$, $X \to Y$

$$\longrightarrow \min_h \Big[\underbrace{\underline{h}^t}_{1\times 2}\underbrace{R_{xx}}_{2\times 2}\underbrace{h}_{2\times 1} - 2\underbrace{R_{sx}^t}_{1\times 2}\underbrace{\underline{h}}_{2\times 1}\Big]$$

$$\frac{\partial}{\partial h}[\,] = h^t R_{xx} - 2 r_{sx}^t = 0 \Rightarrow h^t = R_{xx}^{-1}\cdot 2\, r_{sx}^t\, R_{xx}^{-1}$$