επιθυμητό : $S(n,\theta)$

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

$$\min_h E \| S(n,\theta) - x_n^t(\theta)\, \underline{h} \|^2 =$$
$$= E[\, \underline{h}^t x_n^t(\theta) \cdot x_n(\theta)\, \underline{h} + S^2(n,\theta) - 2 S(n,\theta)\, x_n^t(\theta)\, \underline{h} \,] =$$
$$= \underline{h}^t E[x_n^T(\theta)\, x_n(\theta)] \cdot \underline{h} + \underbrace{E[S^2(n,\theta)]}_{\text{ανεξάρτητο } h} - 2 E[S(n,\theta)\, \underset{2\times 1}{x_n^T(\theta)}] \cdot h \rightarrow$$

$S \rightarrow W$
$X \rightarrow Y$

$$\rightarrow \min_h \left[\underset{1\times 2}{\underline{h}^t} \underset{2\times 2}{R_{xx}} \underset{2\times 1}{h} - 2 \underset{1\times 2}{r_{sx}^t} \underset{2\times 1}{\underline{h}} \right]$$

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