

$$D = \begin{bmatrix} A_{k \times k} & B_{k \times (n-k)} \\ C_{(n-k) \times k} & I_{(n-k) \times (n-k)} \end{bmatrix}$$

$$D D^{-1} = I$$

$$D^{-1} = \begin{bmatrix} a_1_{k \times k} & a_2_{k \times (n-k)} \\ a_3_{(n-k) \times k} & a_4_{(n-k) \times (n-k)} \end{bmatrix}$$

$$\begin{bmatrix} A & B \\ C & I \end{bmatrix} \begin{bmatrix} a_1 & a_2 \\ a_3 & a_4 \end{bmatrix} = \begin{bmatrix} A a_1 + B a_3 & A a_2 + B a_4 \\ C a_1 + a_3 & C a_2 + a_4 \end{bmatrix} = \begin{bmatrix} I & 0 \\ 0 & I \end{bmatrix}$$

$$C a_1 + a_3 = 0 \rightarrow a_3 = -C a_1 \rightarrow a_4 = -C \cdot (A - BC)^{-1}$$

$$A a_1 + B a_3 = I \rightarrow A a_1 - B C a_1 = I \rightarrow a_1 (A - BC) = I \rightarrow a_1 = (A - BC)^{-1}$$

الآن $A - BC$ دارن معکوسه

$$C a_2 + a_4 = 0 \rightarrow a_4 = -C a_2 \rightarrow a_4 = 0$$

$$A a_2 + B a_4 \rightarrow A a_2 - B C a_2 = 0 \rightarrow a_2 (A - BC) = 0 \rightarrow a_2 = 0$$

$$D^{-1} = \begin{bmatrix} (A - BC)^{-1} & 0 \\ -C \cdot (A - BC)^{-1} & 0 \end{bmatrix}$$

معکوس $A - BC$ دارن معکوسه

D نیز دارن معکوسه