

$$p \xrightarrow{W} a \quad S(m) = \text{ranklin}(m)$$

given $p_1, t_1, \dots, p_Q, t_Q$

Q, R -vectors
for P
 Q, S -vectors
for T

$$P = [p_1, \dots, p_Q]$$

$$T = [t_1, \dots, t_Q]$$

let assume $R = Q$ & P orthogonal, $P * P' = I_Q$
then set $= P' * P$

$$W = T P' \quad \text{eq. 7.9}$$

$$a = W p$$

if $p = p_i$, any $i = 1, \dots, Q$

$$p' p_i = \begin{bmatrix} p_1' \\ \vdots \\ p_i' \\ \vdots \\ p_Q' \end{bmatrix} p_i = \begin{bmatrix} 0 \\ \vdots \\ 1 \\ 0 \\ \vdots \\ 0 \end{bmatrix} \leftarrow i\text{th position}$$

$$\therefore W p_i = T p' p_i = \begin{bmatrix} t_1, \dots, t_i, \dots, t_Q \end{bmatrix} \begin{bmatrix} 0 \\ \vdots \\ 1 \\ \vdots \\ 0 \end{bmatrix} \leftarrow i \\ = t_i$$