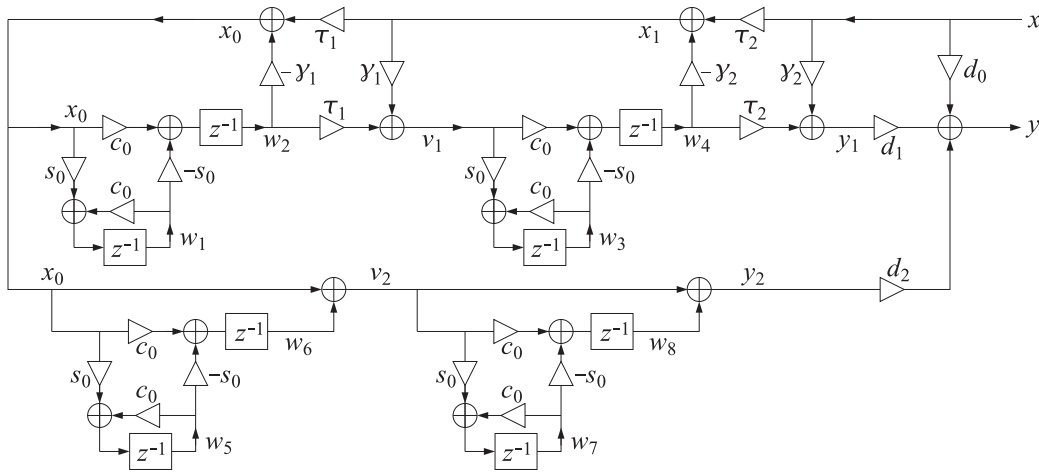


## Frequency-Shifted Decoupled Form



Sample processing algorithm:

for each input sample  $x$  do:

$$\begin{aligned}
 y_1 &= \gamma_2 x + \tau_2 w_4 \\
 x_1 &= \tau_2 x - \gamma_2 w_4 \\
 v_1 &= \gamma_1 x_1 + \tau_1 w_2 \\
 x_0 &= \tau_1 x_1 - \gamma_1 w_2 \\
 v_2 &= x_0 + w_6 \\
 y_2 &= v_2 + w_8 \\
 y &= d_0 x + d_1 y_1 + d_2 y_2 \\
 w_4 &= c_0 v_1 - s_0 w_3 \\
 w_3 &= s_0 v_1 + c_0 w_3 \\
 w_2 &= c_0 x_0 - s_0 w_1 \\
 w_1 &= s_0 x_0 + c_0 w_1 \\
 w_8 &= c_0 v_2 - s_0 w_7 \\
 w_7 &= s_0 v_2 + c_0 w_7 \\
 w_6 &= c_0 x_0 - s_0 w_5 \\
 w_5 &= s_0 x_0 + c_0 w_5
 \end{aligned}$$