As the activation function is the RELU function, we should take the sign of the independent variable. According to the chain rule, we have:

$$\frac{\partial J}{\partial w} = \frac{\partial J}{\partial \hat{\boldsymbol{y}}} \frac{\partial \hat{\boldsymbol{y}}}{\partial \boldsymbol{O}} \frac{\partial \boldsymbol{O}}{\partial \boldsymbol{M}} \frac{\partial \boldsymbol{M}}{\partial c} \frac{\partial c}{\partial w}$$

so if $w\dot{x}_{i:i+h-1} + b_1 > 0$ and $MU + b_2 > 0$, by which I mean every entry is greater than 0, then:

$$\frac{\partial J}{\partial w} = (\hat{\boldsymbol{y}} - \boldsymbol{y})(MU + b_2)U'I(x_{i:i+h-1} + b_1)x'_{i:i+h-1}$$

else it is equal to 0.

Finally we update

$$w = w - lr * \frac{\partial J}{\partial w}$$