Resolution for Least Squares

The model and data resolution for the overdetermined least-squares problem are:

$$\mathcal{R}_{model} = [M^T M]^{-1} M^T M \simeq I$$
$$\mathcal{R}_{data} = M[M^T M]^{-1} M^T$$

Similarly, the model and data resolution for the underdetermined case are:

$$\mathcal{R}_{model} = M^T [M M^T]^{-1} M$$
$$\mathcal{R}_{data} = M M^T [M M^T]^{-1} \simeq I$$

I use the approximate equality symbol here to emphasize that the inverses shown may not exist. If not, then the appropriate generalized inverse should be substituted and then the identity I on the right is replaced $\mathcal{R}$.