If X less than full rank ($r < p$) then collinearity exists among the columns of X
$X_{n\times p} = X_{*,(n\times r)}V'_{+,(r\times p)}$
Suppose we have less than full rank model:
$y_{n\times 1} = X_{n\times p}\beta_{p\times 1} + \epsilon_{n\times 1}$
Define $X_{*,(n\times r)}V_{+,(p\times r)}$ with $\beta_{*,(r\times 1)}$
Then equivalent full rank model:
$y_{n\times 1} = X_{*,(n\times r)}\beta_{*,(r\times 1)} + \epsilon_{n\times 1}$ with $\hat{\beta}_* = (X'_*X_*)^{-1}X'_*y$
Many possible choices for $V_+$ such as the set of eigenvectors of $X'X$
corresponding to non-zero eigenvalues.