If simpler model is true, is $\hat{\sigma}^2_F$ an unbiased estimate of σ^2?

Yes.

To be unbiased means $E\left[\hat{\sigma}^2_F\right] = \sigma^2$

Here, $\hat{\sigma}^2_F$ is the estimate of σ^2 under the full model; this is $E[MSE]$ under the full model. $E[MSE] = E\left[\frac{Y'(I-M)Y}{r(I-M)}\right] = \sigma^2$ by Theorem 1.3.2.

When the simpler model is true, $E\left[Y'(M-M_0)Y\right] = \sigma^2 \cdot r(M-M_0) + (X\beta)'(M-M_0)(X\beta)$

Such that $X\beta = X_0\gamma$ and $(M-M_0)(X_0\gamma) = 0$

$$MX\beta - M_0X_0\gamma = 0$$
$$Y - Y = 0$$

And $E\left[\frac{Y'(M-M_0)Y}{r(M-M_0)}\right] = \sigma^2$, the same variance as in the full model,

where $\hat{\sigma}^2_F = E[MSE] = \sigma^2$