

$$n = 160$$

$$k = 3$$

$$MSR = \frac{SSR}{k} = \frac{1351201.95}{3} = 450400.65$$

$$MSE = \frac{SSE}{n-k-1} = \frac{1650546.33}{160-3-1} = 10580.43$$

$$F = \frac{MSR}{MSE} = \frac{450400.65}{10580.43} = 42.57$$

$$SST = SSR + SSE = 1351201.95 + 1650546.33 = 3001748.28$$

$$R^2 = \frac{SSR}{SST} = \frac{1351201.95}{3001748.28} = 0.45$$

$$\text{Adjusted } R^2 = 1 - \left[(1-R^2) \frac{n-1}{n-k-1} \right] = 1 - \left[(1-0.45) \frac{160-1}{160-3-1} \right]$$

$$= 1 - \left[0.55 * \frac{159}{156} \right] = 1 - \left[0.55 * 1.019 \right]$$

$$= 1 - 0.561 = 0.439$$

If $F > F_{\text{critical}}$, we reject the null hypothesis. In this case $42.57 > 2.66$. Therefore, the model is statistically significant. The variances of the 160 observations are unequal.