EKT 720

Structural break - Assignment 6

$Y_i = \beta_0 + \beta_1 X_i + \beta_2 (X_i - X_1^*) D_{1i} + \beta_3 (X_i - X_2^*) D_{2i} + u_i$

where

$$D_{1i} = 1 \text{ if } X_i > X_1^*$$
$$D_{1i} = 0 \text{ if } X_i \leq X_1^*$$
$$D_{2i} = 1 \text{ if } X_i > X_2^*$$
$$D_{2i} = 0 \text{ if } X_i \leq X_2^*$$

(Assume that $X_1^* < X_2^*$)

Section where $X_i \leq X_1^*$

$Y_i = \beta_0 + \beta_1 X_i + u_i$

Section where $X_1^* < X_i \leq X_2^*$

$Y_i = \beta_0 + \beta_1 X_i + \beta_2 (X_i - X_1^*) + u_i$

$= (\beta_0 - \beta_2 X_1^*) + (\beta_1 + \beta_2) X_i + u_i$

Section where $X_i > X_2^*$

$Y_i = \beta_0 + \beta_1 X_i + \beta_2 (X_i - X_1^*) + \beta_3 (X_i - X_2^*) + u_i$

$= (\beta_0 - \beta_2 X_1^* - \beta_3 X_2^*) + (\beta_1 + \beta_2 + \beta_3) X_i + u_i$