

## 6.2 Method used for estimation of relative standard errors (RSEs)

Sampling errors are estimated in terms of the coefficient of variation, CV (%) according to the following relationships:

In each stratum,  $h$ , let:

$y_{hi}$ : the value of the characteristic  $y$  of the holding of order  $i$  belonging to stratum  $h$

$N_h$ : the total number of holdings belonging to stratum  $h$

$n_h$ : the number of the respondent holdings in stratum  $h$ , excluding the extra holdings derived from splitting

Then:

$Y_h$ : the sum of variable  $Y$  over all the holdings in stratum  $h$

$$Y_h = \sum y_{hi} \quad (1)$$

$Y$ : the sum of variable  $Y$  over all the holdings in all the strata

$$Y = \sum_h Y_h \quad (2)$$

Estimates for  $Y_h$  and  $Y$  are given by:

$$\hat{Y}_h = \frac{N_h}{n_h} = \sum_{i=1}^{n_h} y_{hi} \quad (3)$$

$$\hat{Y} = \sum_h \hat{Y}_h \quad (4)$$

The variance estimation of  $\hat{Y}_h$  and  $\hat{Y}$  is given by:

$$V(\hat{Y}_h) = \frac{N_h(N_h - n_h)}{n_h} S_h^2 \quad (5)$$

Where

$$S_h^2 = \frac{1}{n_h - 1} \left[ \sum_{i=1}^{n_h} y_{hi}^2 - \frac{\left( \sum_{i=1}^{n_h} y_{hi} \right)^2}{n_h} \right] \quad (6)$$

and

$$V(\hat{Y}) = \sum_h V(\hat{Y}_h) \quad (7)$$

The coefficient of variation of the estimate of  $Y$  is given by:

$$CV(\hat{Y}) = \frac{\sqrt{V(\hat{Y})}}{\hat{Y}} \quad (8)$$