Functional form

dep. var. (y) $\longrightarrow$ price of house (\$1,000)

indep. var. (x) $\longrightarrow$ size in sq. ft.

$$y = \beta_0 + \beta_1 x + u$$

$\hat{\beta}_1 = 0.14$ For $\Delta x = 1$, $\Delta y = 0.14$ (i.e. $\hat{\beta}_1$)

$$\log(y) = \beta_0 + \beta_1 x + u$$

$\hat{\beta}_1 = 0.0004$

Approx. effect of $\Delta x = 1$: $\% \Delta y = 100 \hat{\beta}_1 = 0.04\%$

Exact effect of $\Delta x = 1$: $\% \Delta y = 100\left[\exp(\hat{\beta}_1) - 1\right] = 0.04\%$

Similar effect for small $\hat{\beta}_1$.

Why logs? const. % effect may be more credible

unit-free effects

$$\log(y) = \beta_0 + \beta_1 \log(x) + u$$

$$\hat{\beta}_1 = 0.873$$

For $\Delta x = 1\%$

$\Delta y = 0.873\%$ (i.e. $\hat{\beta}_1$) approx. effect