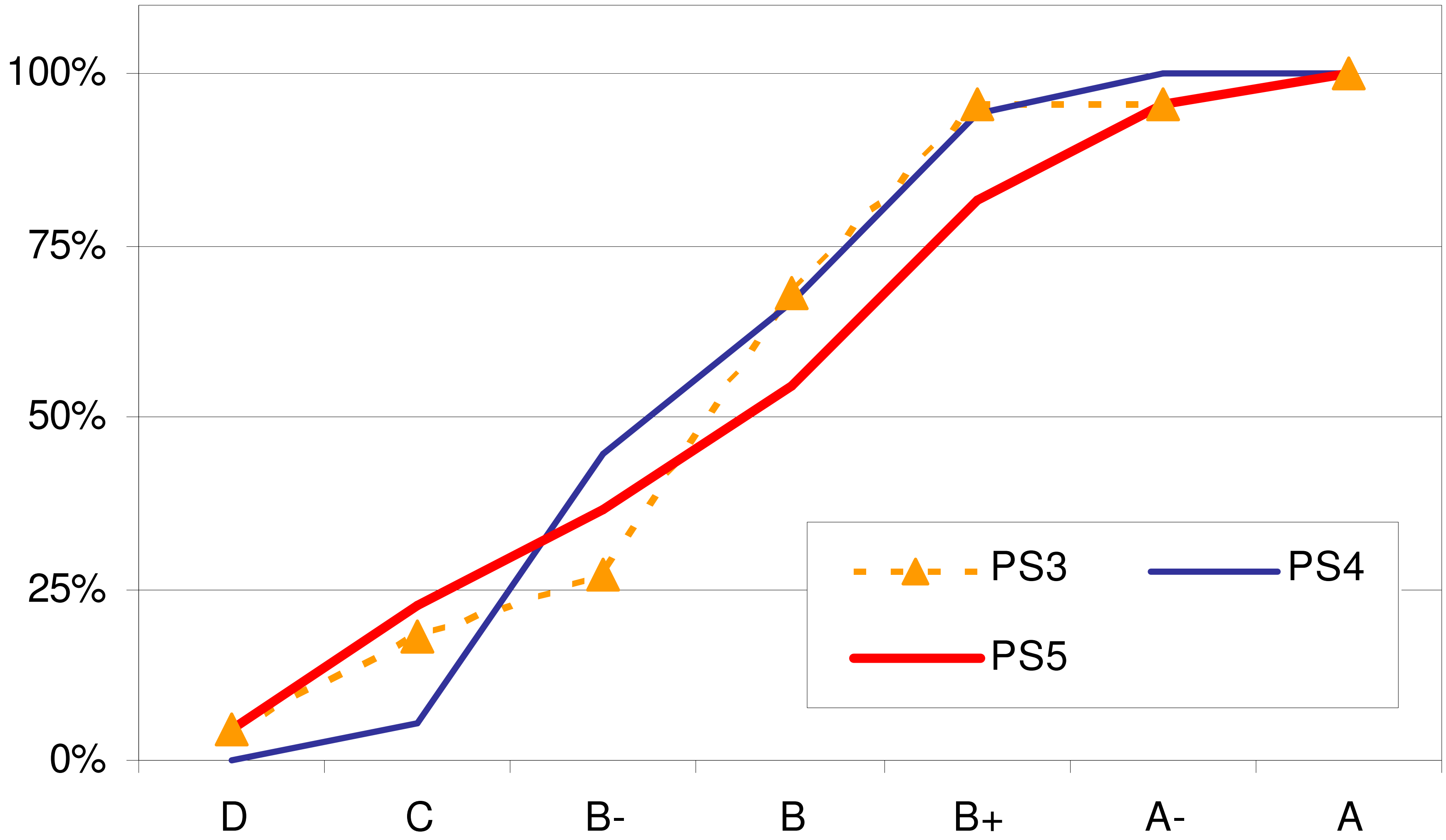
EC220-PS5

Antoine Goujard
a.j.goujard@lse.ac.uk

Office hour: on Monday in S684
from 16:30 to 17:30


100%
75%
50%
25%
0%
D
C
B-
B
B+
A-
A
PS3
PS4
PS5

Fitted line $\hat{Y}$ With Y the dependent variable.

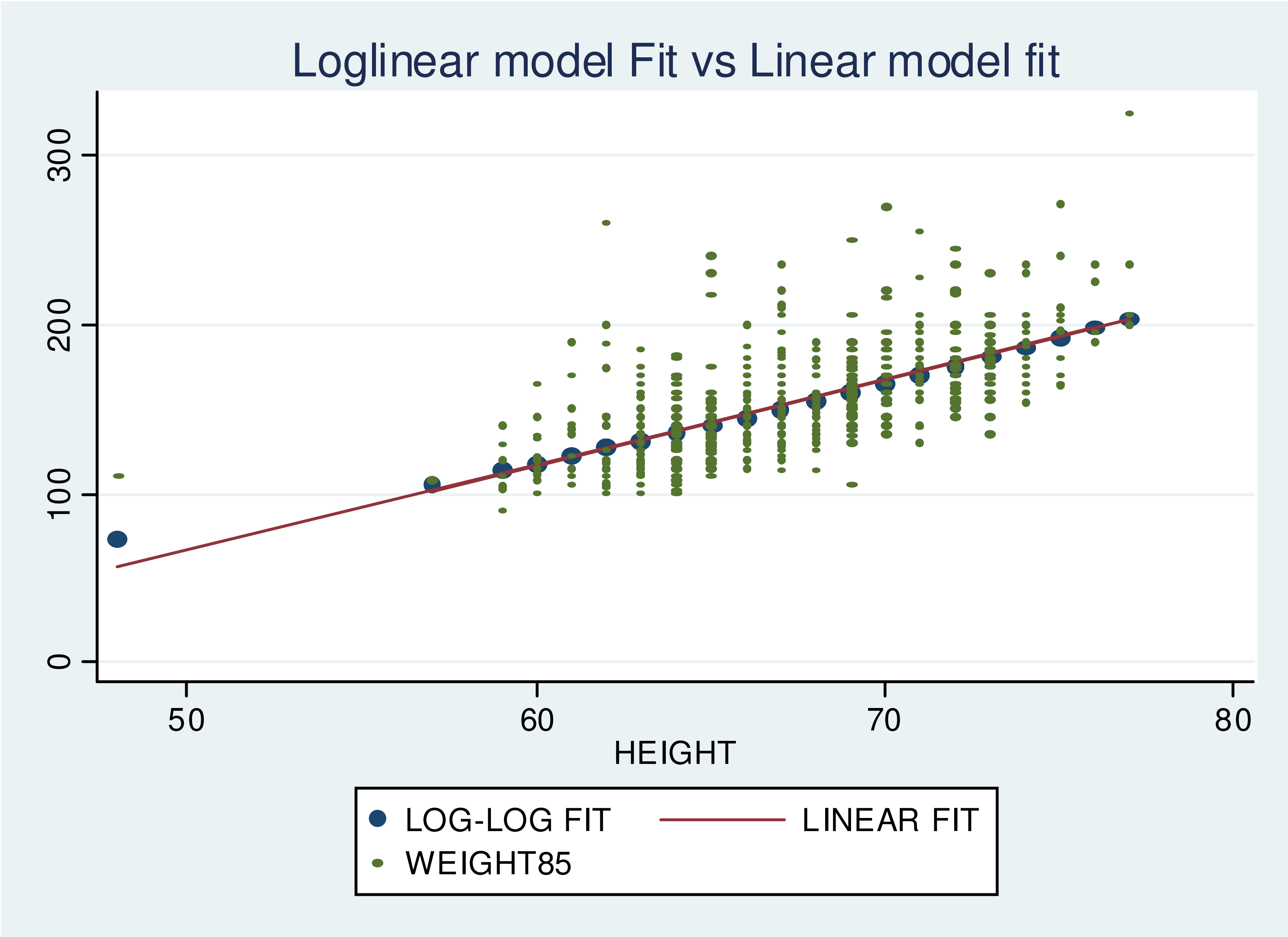
In particular, $\hat{Y} \neq \exp(\widehat{\log Y})$

Notations $b \neq \beta$

Rules for exp and ln/log

Interpretation in the multiple regression
holding the other variables constant

Interpretation of logarithmic and semilogarithmic models (elasticity, effect of expl. Var.)


Loglinear model Fit vs Linear model fit
0
100
200
300
50
60
70
80
HEIGHT
LOG-LOG FIT
LINEAR FIT
WEIGHT85

Box-cox transformation

We want to compare the following models:

$$\begin{cases} (1) \quad \ln(Y_i) = \beta_1 + \beta_2 X_i + u_i \\ (2) \quad Y_i = \alpha_1 + \alpha_2 X_i + v_i \end{cases}$$

We fit models (1) and (2) by OLS and obtain:

$$\begin{cases} (1) \quad \hat{\ln}(Y_i) = b_1 + b_2 X_i, RSS_1, R_1^2 \\ (2) \quad \hat{Y}_i = c_1 + c_2 X_i, RSS_2, R_2^2 \end{cases}$$

We can not compare directly RSS1 and RSS2 because they do not have the same unit. In our case, Y is in $/hour while ln(Y) has not the same unit :

Ln(Y) is measured in “ln($/hour)”

The residuals have the same units as the dependent variables which are different between model (1) and model (2). The same holds for the RSSs, we can not compare them directly!!