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Module 9: Single and Multivariate Linear Models > The Linear Model > Assumptions of the Linear Model - Quiz

Assumptions of the Linear Model - Quiz

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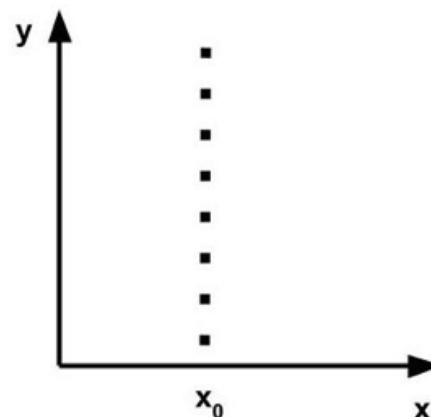
Recall our linear model:

$$Y_i = \beta_0 + \beta_1 x_i + \epsilon \text{ for } i = 1, 2, \dots, n$$

Question 1

1/1 point (graded)

Which assumption of the linear model does the below scenario violate?



- ▶ [Module 5: Moments of a Random Variable, Applications to Auctions, & Intro to Regression](#)
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The Linear Model

due Nov 28, 2016 05:00 IST


☐ a. X_i, ϵ_i uncorrelated

☒ b. Identification ✓

☐ c. $E[\epsilon_i] = 0$
☐ d. Homoscedasticity. $E[\epsilon_i^2] = \sigma^2$ for all i .

☐ e. No serial correlation. $E[\epsilon_i \epsilon_j] = 0$ for $i \neq j$.
Explanation

In the linear model, we assume that there is some variation in our regressor X . If X were always the exact same value regardless of the value of Y , then we would not be able to predict or learn anything about Y based on X .

Submit

You have used 1 of 2 attempts

✓ Correct (1/1 point)

Question 2

The Multivariate Linear Model

due Nov 28, 2016 05:00 IST



Module 9: Homework

due Nov 21, 2016 05:00 IST

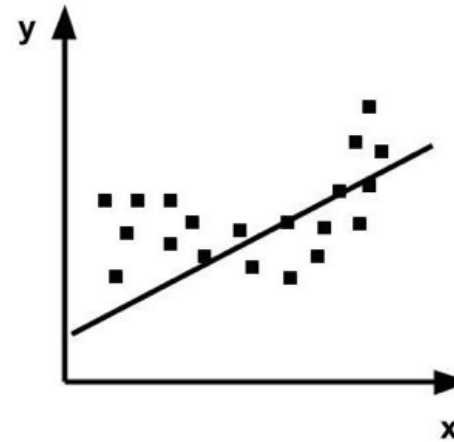


► Module 10: Practical Issues in Running Regressions, and Omitted Variable Bias

► Exit Survey

1/1 point (graded)

Which assumption of the linear model does the below scenario violate?



- ☐ a. X_i, ϵ_i uncorrelated
- ☐ b. Identification
- ☐ c. $E[\epsilon_i] = 0$
- ☐ d. Homoscedasticity. $E[\epsilon_i^2] = \sigma^2$ for all i .
- ☒ e. No serial correlation. $E[\epsilon_i \epsilon_j] = 0$ for $i \neq j$. ✓

Explanation

In the linear model, we assume that there are no areas where errors are mostly positive or other areas where errors are mostly negative.

Submit

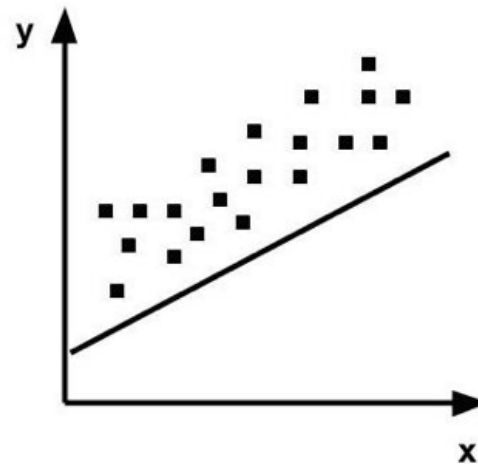
You have used 1 of 2 attempts

✓ Correct (1/1 point)

Question 3

1/1 point (graded)

Which assumption of the linear model does the below scenario violate?



- ☐ a. X_i, ϵ_i uncorrelated
- ☐ b. Identification
- ☒ c. $E[\epsilon_i] = 0$ ✓
- ☐ d. Homoscedasticity. $E[\epsilon_i^2] = \sigma^2$ for all i .
- ☐ e. No serial correlation. $E[\epsilon_i \epsilon_j] = 0$ for $i \neq j$.

Explanation

In the linear model, we assume that the expectation of the error is zero. There is no way for us to between a non-zero error mean and a different intercept β_0 , so we just assume the error is zero in expectation.

Submit

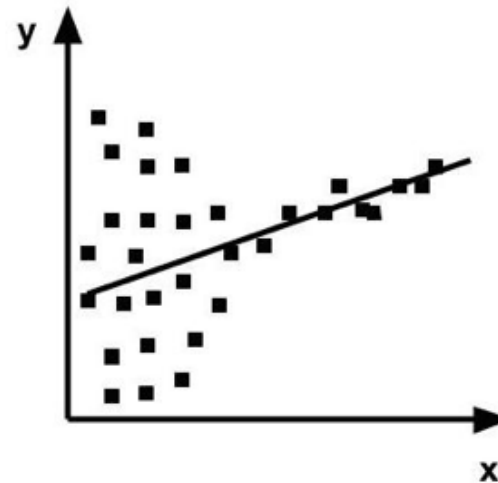
You have used 1 of 2 attempts

✓ Correct (1/1 point)

Question 4

1/1 point (graded)

Which assumption of the linear model does the below scenario violate?



- ☐ a. X_i, ϵ_i uncorrelated
- ☐ b. Identification
- ☐ c. $E[\epsilon_i] = 0$
- ☒ d. Homoscedasticity. $E[\epsilon_i^2] = \sigma^2$ for all i . ✓
- ☐ e. No serial correlation. $E[\epsilon_i \epsilon_j] = 0$ for $i \neq j$.

Explanation

Explanation: We assume homoscedasticity in the linear model, meaning the error variance should be consistent across all values of \mathbf{x} . In the case above, the variance of the error is much higher at lower values of \mathbf{x} .

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You have used 1 of 2 attempts

✓ Correct (1/1 point)

Discussion

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Topic: Module 9 / Assumptions of the Linear Model - Quiz

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