Name

ID

QM — Practice Exam 10 Marks

Zahid Asghar

Question 1

What does *endogenous* mean, in words? What about statistically?

Question 2

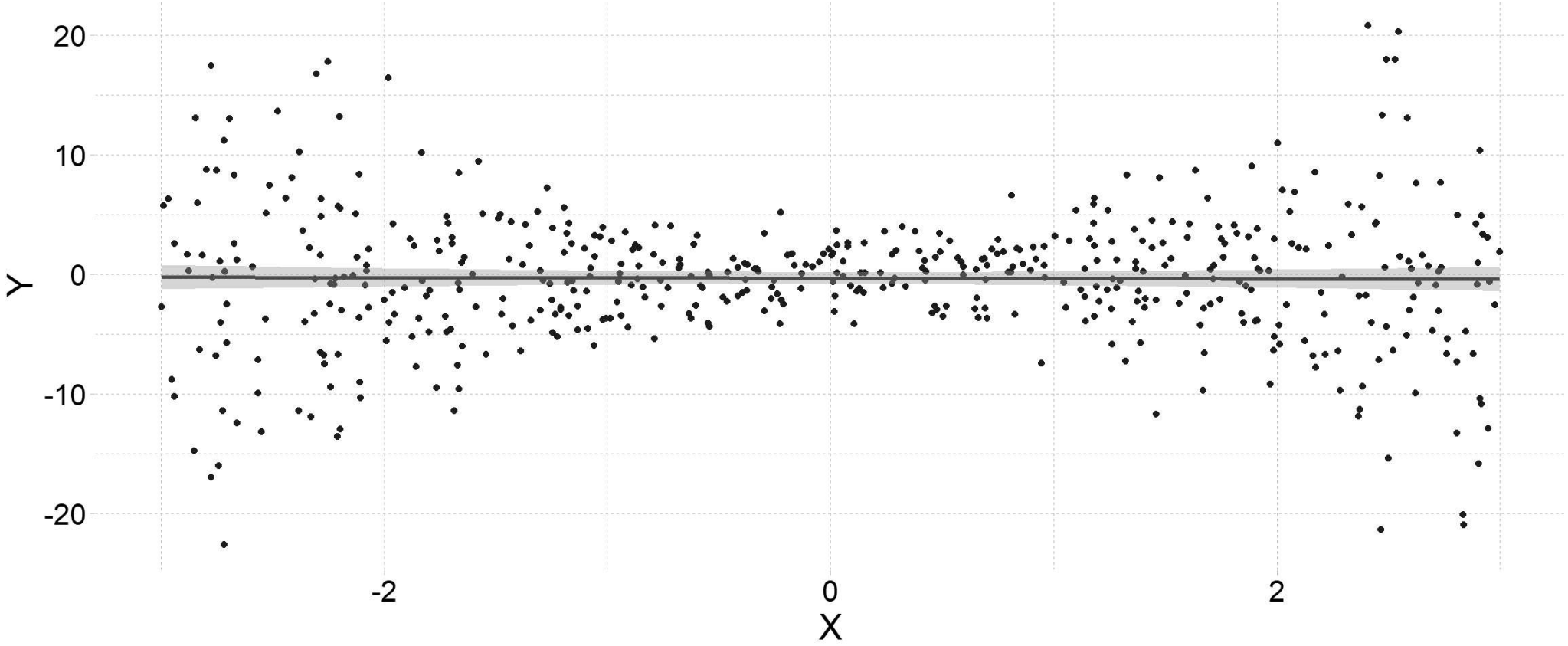
If a regression is *biased* (from endogeneity), what can we learn about the bias?

Question 3

What does *heteroskedasticity* mean? Does *heteroskedasticity* **bias** $\hat{\beta}_1$?

Question 4

Is this data likely *heteroskedastic* or *homoskedastic*?



Question 5

What three things impact the variation of $\hat{\beta}_1$? How?

Question 6

What are the four assumptions we make about the error term?

Which is most important?

Question 7

$$Wages_i = \beta_0 + \beta_1 Education + u_i$$

a. What is in u_i?

b. Is $\hat{\beta}_1$ likely biased?

Question 8

What does R^2 measure? What does it mean? How do we calculate it?

Question 9

What does σ_u (SER) measure? What does it mean?

Question 10

Interpret all of these numbers (except Adjusted R-squared and the last line):

```
Call:
lm(formula = y ~ x, data = het_data)

Residuals:
     Min       1Q   Median       3Q      Max
-22.3737  -2.8501   0.3076   2.8021  21.2207

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -0.33818    0.25768  -1.312    0.190
x           -0.02625    0.14680  -0.179    0.858

Residual standard error: 5.762 on 498 degrees of freedom
```

Question 11

Interpret all of these numbers:

	y
Constant	−0.34
	(0.26)
x	−0.03
	(0.15)
n	500
R^2	0.00
SER	5.75

* p < 0.1, ** p < 0.05, *** p < 0.01

Question 12

Suppose Y is normally distributed with a mean of 10 and a standard error of 5. What is the probability that Y is between 5 and 15?

Question 13

Explain what a Z-score means.

Question 14

Explain what a p-value means.

Question 15

We run the following hypothesis test at $\alpha = 0.05$:

$$H_0 : \beta_1 = 0$$
$$H_1 : \beta_1 \neq 0$$

Is this test one-sided or two-sided?

We find the p-value is 0.02. What is our conclusion? Be specific and precise in your wording!

Question 16

Suppose we ran that hypothesis test on our finding. What can we conclude?

```
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