

66-819

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5'

1

$$Y = XS + u$$

$$E(u) = 0$$

$$E(uu') = \sigma^2 I$$

$$-X$$

$$E(BY) = S -$$

B

$$.S -$$

DY

$$D \neq B$$

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1. $BX = I$

2. $E(BX) = I$

3. $BY > (X'X)^{-1} X'Y$

4. $D = (X'X)^{-1}$

5. $E(DY) = S$

6. $Var(BY) > \sigma^2 (X'X)^{-1}$

7. $E(BY - DY) = 0$

8. $Var(BY - DY) = 0$

9. $E(2B - D)Y = S$

10. $E(Bu) = E(Du)$

$$Y = XS + u$$

.S - OLS b

$$\hat{Y} = Xb \quad e$$

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$$1. Y'Y = b'X'Y$$

$$2. b'X'Y = 0$$

$$3. e = Y - Xb$$

$$4. e = Y - XS$$

$$5. e'e = Y'Y - b'(X'X)^{-1}$$

$$6. e'e = Y'Y - b'(X'X)^{-1}X'Y$$

$$7. u = Y - XS$$

$$8. X'u = 0$$

$$9. X'e = 0$$

$$10. b'X'u = 0$$

$$11. e'e = Y'Y - b'X'Y$$

$$12. e'e = y'y - b'x'y$$

$$13. u = Y - Xb$$

3

$$n \times k \quad X$$

$$\text{rank}(X) = k$$

$$M = I - X(X'X)^{-1}X'$$

$$L = X(X'X)^{-1}X'$$

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1. ML

2. LM

3. LL'

4. LX

5. $\text{trace}(ML)$

6. $\text{trace}(I - ML)$

7. $\text{trace}(LM)$

8. $\text{rank}(M)$

4

$$Q = \begin{pmatrix} G'G & G'1 & G'D \\ G'1 & 1'1 & D'1 \\ G'D & D'1 & D'D \end{pmatrix}$$

$n = 8$

$n \times 1$ - G

$n \times 1$ - 1

$n \times 1$ - D

D' 1 G $n \times 3$ - M

M Q .1

$$? \begin{pmatrix} 1'1 & D'1 \\ D'1 & D'D \end{pmatrix} \quad .2$$