

.W " .Y = XS + u

.Ω E(uu') .E(uu') = †²Ω .1

.PP' = Ω P .2

P⁻¹ .3

.S - GLS .4

.V(Ŝ<sub>GLS</sub>) = †²(X'Ω⁻¹X)⁻¹ S - GLS .5

,s - OLS .6

? . . . OLS .7

s - OLS .8

V(Ŝ<sub>OLS</sub>) = †²(X'X)⁻¹X'ΩX(X'X)⁻¹

.V(Ŝ<sub>OLS</sub>) > V(Ŝ<sub>GLS</sub>) - .9

- A = (X'X)⁻¹X' - (X'Ω⁻¹X)⁻¹X'Ω⁻¹ :  
 V(Ŝ<sub>OLS</sub>) - V(Ŝ<sub>GLS</sub>) = AΩA' > 0

: WHITE .10

?Ŝ<sub>WHITE</sub>

?V(Ŝ<sub>WHITE</sub>)

?V(Ŝ<sub>WHITE</sub>) -