so ~~det~~ = ζ_0 can just use

$$\det\begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix}$$ as C_{tL}, C_{ss} converge to C_{tot}!

and $C_{tot} > 0$

$$= \begin{pmatrix} I & I+B & I+C \\ I+B^T & I & I+D \\ I+C^T & I+D^T & I \end{pmatrix}$$

2nd term $= -(I+B)\left((I+B^T) - (I+D)(I+C^T)\right)$

$= -(I+B)(B^T - D - C)$

$= -B^T + D + C$

3rd term $= (I+C)\left((I+B^T)(I+D^T) - I(I+C^T)\right)$

$= (I+C)(I + B^T + D^T - C^T - I + \cdots)$

$= B^T + D^T - C^T$

all cancel!