

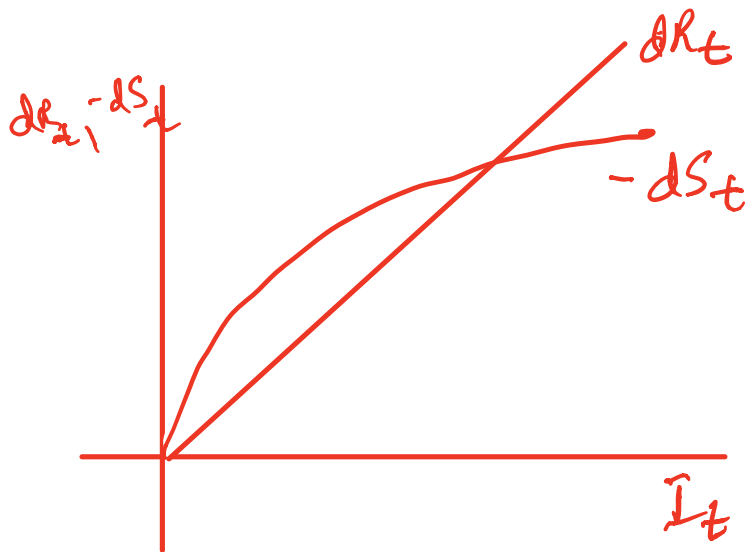
Graphical SIR model

$$\text{Pop} = N = \overset{\text{Susceptible}}{S_t} + \overset{\text{Infected}}{I_t} + \overset{\text{Recovered}}{R_t}$$

$$dN = \underbrace{\left(-\beta I_{t-1} \frac{S_{t-1}}{N} \right)}_{dS_t} + \underbrace{\left(\beta I_{t-1} \frac{S_{t-1}}{N} - \gamma I_{t-1} \right)}_{dI_t} + \underbrace{\gamma I_{t-1}}_{dR_t}$$

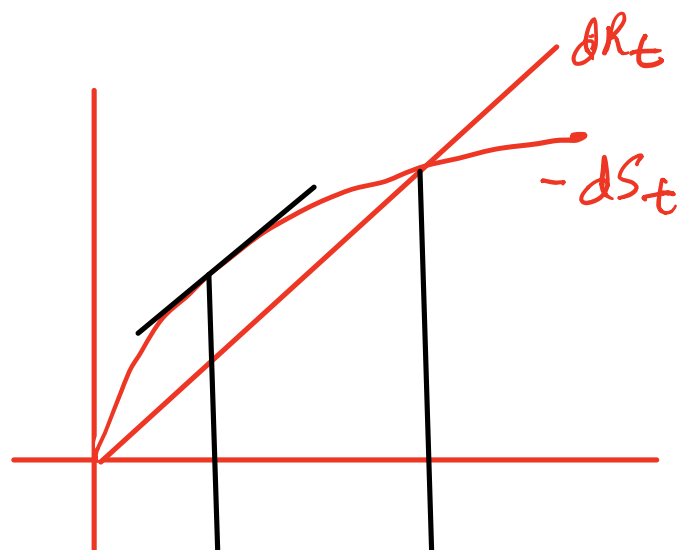
(Diagram showing transitions: Susceptible to Infected (newly infected), Infected to Recovered (recovered))

Note: $dI_t = -dS_t - dR_t$ in the model since $dN=0$

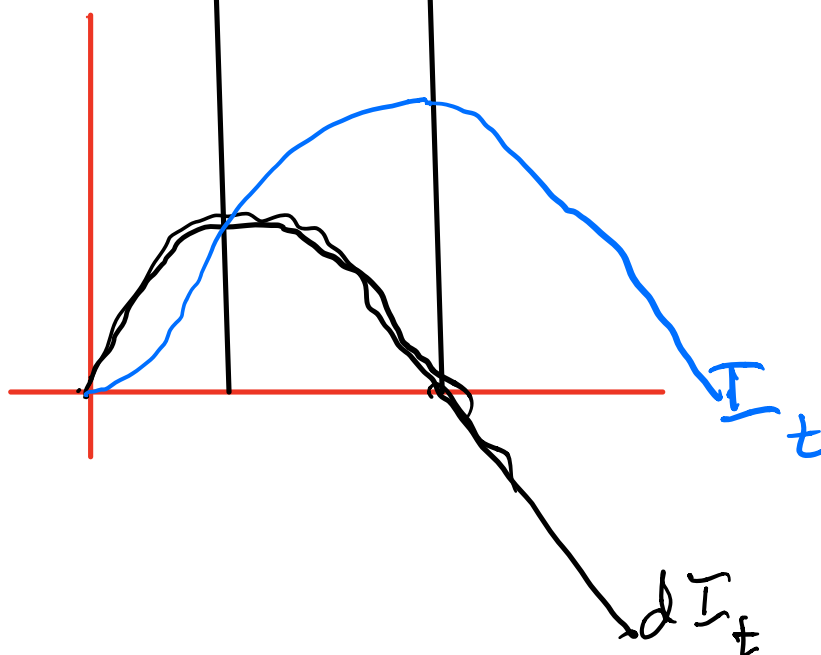


Note: $-dS_t$ is concave

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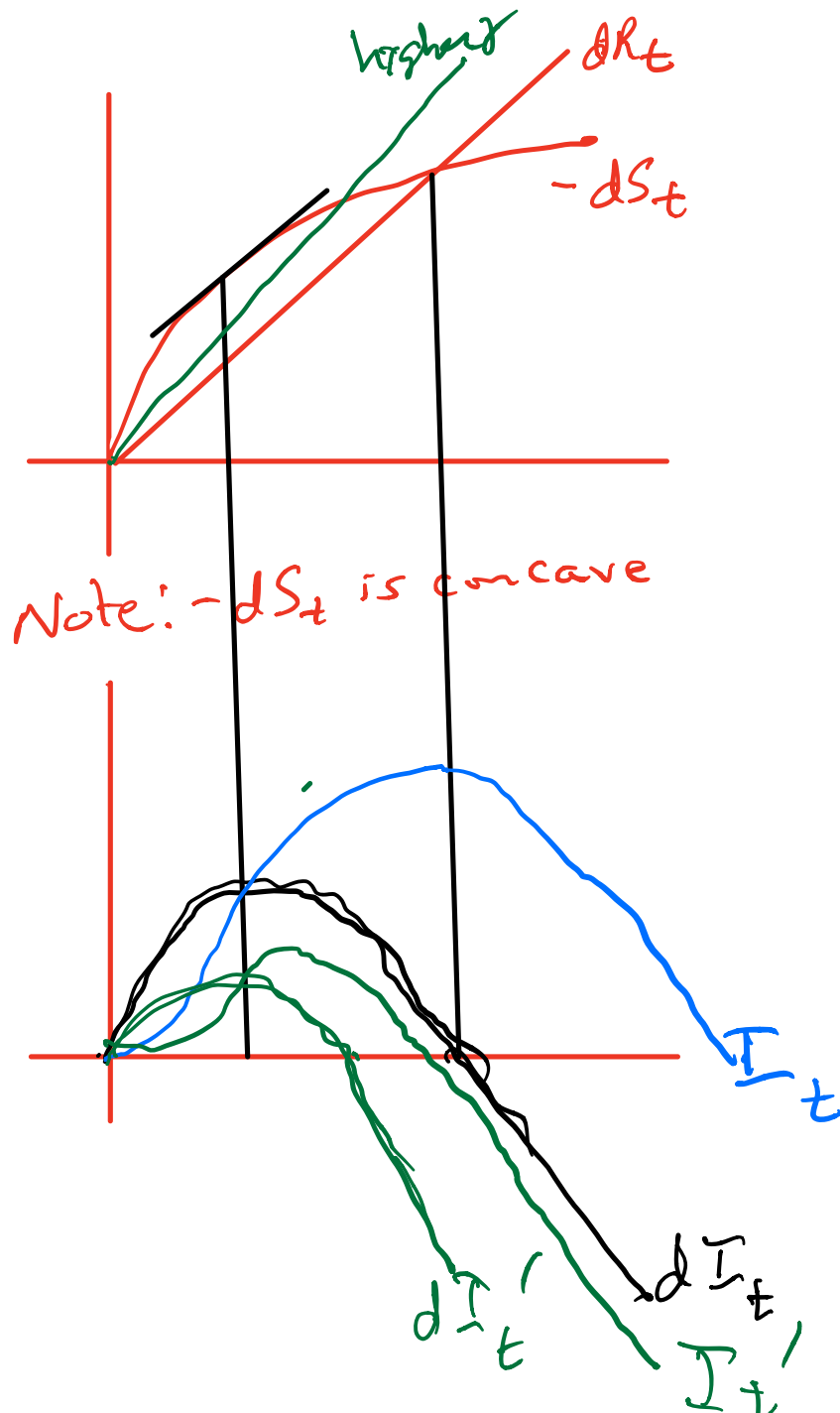


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Comparative Statics : γ

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Comparative Statics : β

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