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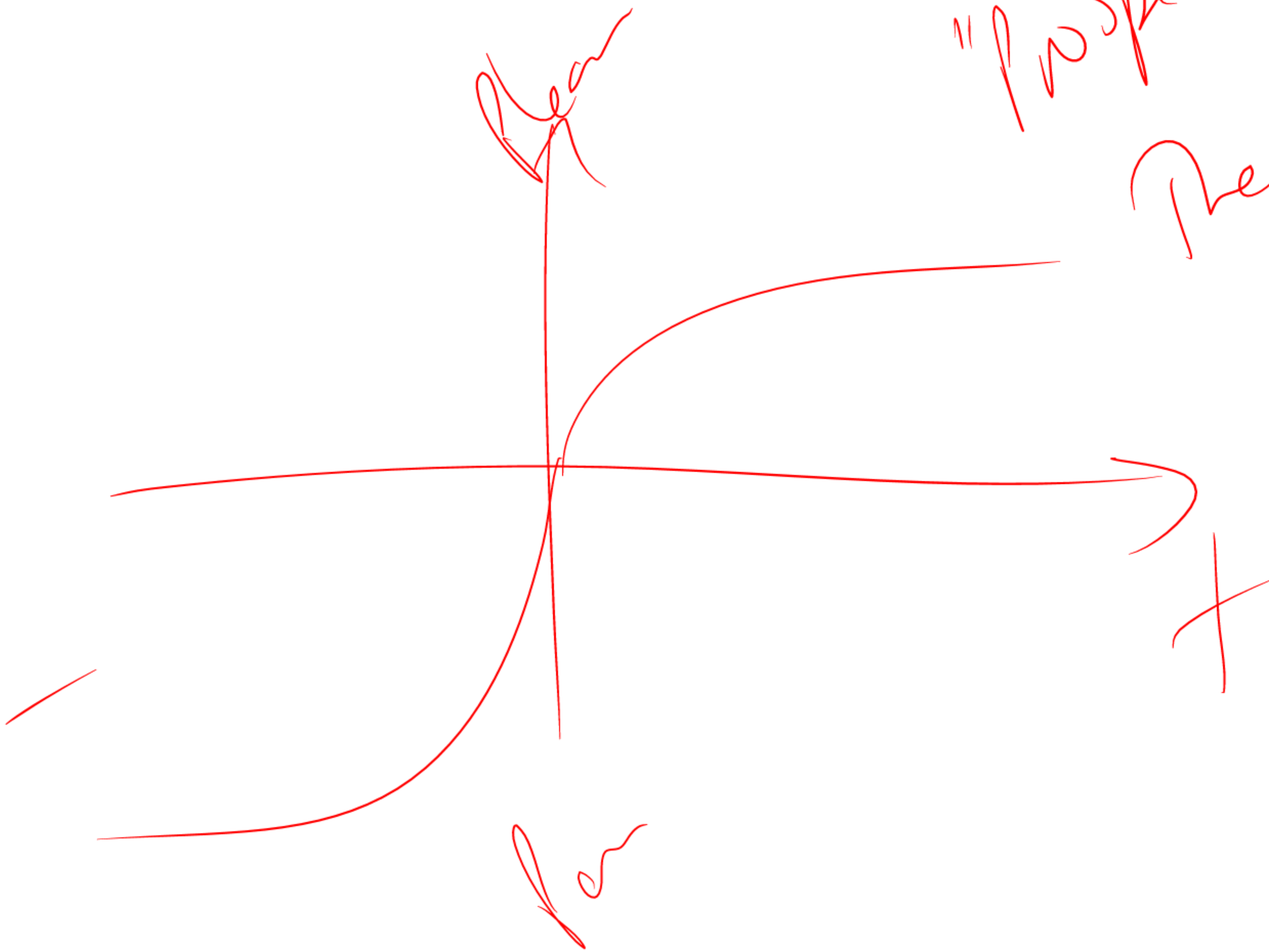
"Prospect Theory"



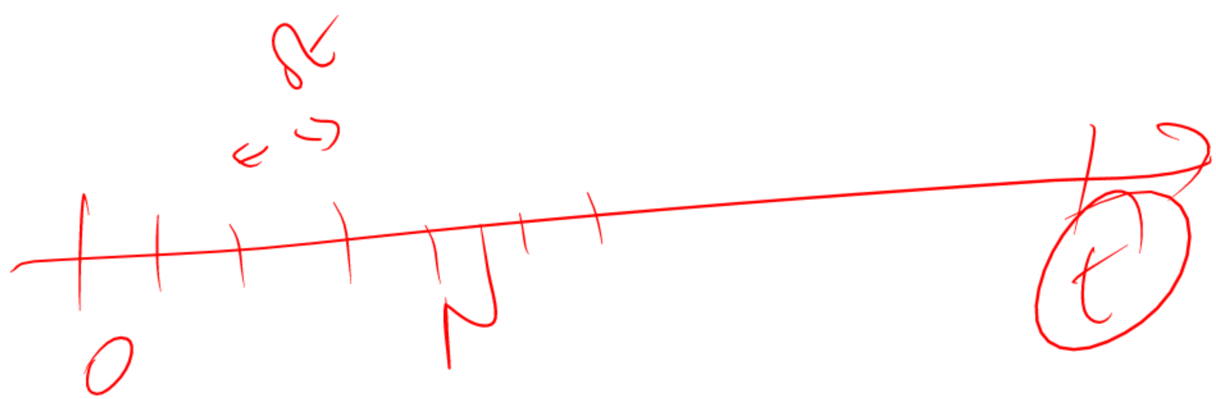
Normal

Fat Tailed Dists

$$S_1 = S_0\left(1+\mu\,\delta t^{\alpha}\right)$$

$$S_2 = S_1\left(1+\mu\,\delta t^{\alpha}\right) = S_0\left(1+\mu\,\delta t^{\alpha}\right)^2$$

$$\underline{S_N} = S_0\left(1+\mu\,\delta t^{\alpha}\right)^N \qquad t = N\,\delta t$$



$$S_N = S(t) = S_0 \left(1 + \mu \cdot \delta t^{\alpha}\right)^{t/\delta t}$$

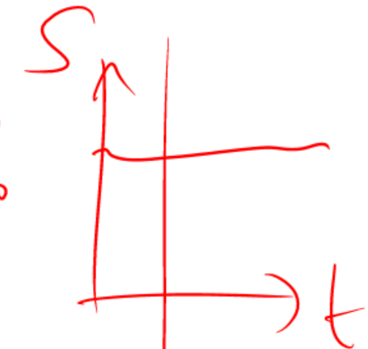
$$= S_0 \exp\left(\frac{t}{\delta t} \ln\left(1 + \mu \, \delta t^{\alpha}\right)\right)$$

$$\simeq S_0 \exp\left(\frac{t}{\delta t} \left(\mu \, \delta t^{\alpha} + \cdots\right)\right)$$

$$\simeq S_0 \exp\left(\mu t \, \delta t^{\alpha - 1} + \cdots \right)$$

$$S(t) = S_0 \, e^{\mu t + \delta t^{\alpha - 1}}$$

1. $\alpha > 1$ $\qquad \lim_{\delta t \to 0} \delta t^{\alpha-1} = 0$ $\qquad S(t) = S_0$



2. $\alpha < 1$ $\qquad \lim_{\delta t \to 0} \delta t^{\alpha-1} = \infty$ $\qquad S(t) = S_0 e^{\infty}$

3. $\alpha = 1$ $\qquad \delta t^{0}$

$$S(t) = S_0 \, e^{\mu t}$$

$$\mu = \frac{1}{\text{Time}}$$

$$\mu t$$

$$e^{rt}$$

$$\sigma = \frac{1}{\sqrt{\text{Time}}}$$

$$\sigma^2 t$$

$$S_{i+1} - S_i = \mu S_i \,\delta t + \sigma S_i \,\phi\, \delta t^{1/2}$$

"i"

$$dS = \mu S\, dt + \sigma S\, dX$$

"δt"

$$\boxed{\frac{dS}{dt} = \mu S}$$

o.d.e.

$$\frac{dS}{dt} = \ldots \frac{1}{dt^{1/2}}$$

$$S = S_0 e^{\mu t}$$

s.d.e.

$$d\frac{\ }{\ } = \frac{\ }{\ }dt + \frac{\ }{\ }dX$$

$dr =$

$d\sigma =$

$$\frac{dS}{S} =$$

$dS = \mu S\,dt + \sigma S\,dX$

$dr = (a - br)\,dt + \cdots$