

berchr. W.

Zeitint. $[t, t+1]$:

$$B(t+1) = B(t) + k(S - B(t))$$

$$\Leftrightarrow \Delta B = k(S - B(t))$$

Zeitint. $[t, t+\Delta t]$:

$$\Delta B = k(S - B(t)) \Delta t$$

$$\Leftrightarrow \frac{\Delta B}{\Delta t} = k(S - B(t))$$

$\Delta t \rightarrow 0$:

$$B'(t) = k(S - B(t))$$

log. W.

Zeitint. $[t, t+1]$:

$$B(t+1) = B(t) + k B(t)(S - B(t))$$

$$\Leftrightarrow \Delta B = k B(t)(S - B(t))$$

Zeitint. $[t, t+\Delta t]$:

$$\Delta B = k B(t)(S - B(t)) \Delta t$$

$$\Leftrightarrow \frac{\Delta B}{\Delta t} = k B(t)(S - B(t))$$

$\Delta t \rightarrow 0$:

$$B'(t) = k B(t)(S - B(t))$$

Wachstum

$B(t)$... Bestand z. z. P t

t ... Zeit

S ... Schranke, $S > 0$.

$$\Delta B(t) =: \Delta B = B(t+\Delta t) - B(t)$$

$$\Delta t = t+\Delta t - t = \Delta t$$

linear: zeit. int. $[t, t+\Delta t]$:

$$B(t+\Delta t) = B(t) + m \iff \frac{\Delta B}{\Delta t} = m = \text{const.}$$

explizit:

$$B(t) = B(0) + m t$$

zeit. int. $[t, t+\Delta t]$:

$$\Delta B = m \Delta t \iff \frac{\Delta B}{\Delta t} = m$$

$\Delta t \rightarrow 0$:

$$B'(t) = m$$

exponentiell: zeit. int. $[t, t+\Delta t]$

$$B(t+\Delta t) = B(t) + k B(t) = B(t) \underbrace{(1+k)}_{=1+q}$$

$$\iff \Delta B(t) = k B(t)$$

explizit: $B(t) = B(0) e^{kt}$

$k > 0 \iff q > 1 \iff w.$

$k < 0 \iff q < 1 \iff z.$

$k = 0 \iff q = 1 \iff S.$

zeit. int. $[t, t+\Delta t]$:

$$\Delta B = k B(t) \Delta t \iff \frac{\Delta B}{\Delta t} = k B(t)$$

$\Delta t \rightarrow 0$:

$$B'(t) = k B(t)$$