T-14 Splettstößer Hennings

$$dD(t) = D(t)\mu\, dt + D(t)\sigma\, dW(t)$$

$$E(t) = \frac{1}{D(t)} \Rightarrow f(x) = x^{-1},\ f'(x) = -x^{-2},\ f''(x) = 2x^{-3}$$ ✓

$\Rightarrow$ Itô's formula: $df(D(t)) = \left(f'(D(t))\mu + \frac{1}{2} f''(D(t))\sigma^2\right)dt + f'(D(t))\sigma\, dW(t)$

You need to use the correct functions from $dD(t) = \dots$ -2 f f f

$$\Leftrightarrow dE(t) = \left(-D(t)^{2}\mu + D(t)^{-3}\sigma^2\right)dt - D(t)^{-2}\sigma\, dW(t)$$ (f)

$$\Leftrightarrow dE(t) = \left(-E(t)^2\mu + E(t)^3\sigma^2\right)dt - E(t)^2\sigma\, dW(t)$$ (f)

$\mu = 0{,}5\,\sigma^2$:

$\hookrightarrow dE(t) = \left(-E(t)^2\, 0{,}5\sigma^2 + E(t)^3\sigma^2\right)dt - E(t)^2\sigma\, dW(t)$ (f)

$\hookrightarrow$ we see that the drift only depends on the exchange rate and the volatility

$\hookrightarrow$ this implies if volatility increases then the expected change of exchange rate also increases.

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