

Simulation Methods

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Learning Module 6: Simulation Methods

Continuously Compounded Returns

$$r_{0,T} = r_{T-1,T} + r_{T-2,T-1} + \dots + r_{0,1} \tag{1}$$

Where:

- $r_{0,T}$: continuously compounded return to time T
- $r_{T-1,T}$: continuously compounded return from time $T - 1$ to time T
- T : total number of periods

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## Continuously Compounded Returns
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r_{0,T} = r_{T-1,T} + r_{T-2,T-1} + \cdots + r_{0,1} \tag{1}
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Where:
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*  $r_{0,T}$ : continuously compounded return to time  $T$ 
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```
*  $r_{T-1,T}$ : continuously compounded return from time  $T-1$  to time  $T$ 
```

```
*  $T$ : total number of periods
```

confirm name?? Expected Continuously Compounded Returns

$$E(r_{0,T}) = E(r_{T-1,T}) + E(r_{T-2,T-1}) + \dots + E(r_{0,1}) = \mu T \tag{2}$$

Where:

- $E(r_{0,T})$: expected continuously compounded return from time 0 to time T
- $E(r_{t-1,t})$: expected continuously compounded return from time $t - 1$ to time t
- μ : mean of the one-period continuously compounded return
- T : total number of periods

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```
## confirm name?? Expected Continuously Compounded Returns

$$
E(r_{0,T}) = E(r_{T-1,T}) + E(r_{T-2,T-1}) + \dots + E(r_{0,1}) = \mu T \tag{2}
$$

Where:

*  $E(r_{0,T})$ : expected continuously compounded return from time 0 to time  $T$ 
*  $E(r_{t-1,t})$ : expected continuously compounded return from time  $t-1$  to time  $t$ 
*  $\mu$ : mean of the one-period continuously compounded return
*  $T$ : total number of periods
```

name?? Variance of Expected Continuously Compounded Returns

$$\sigma^2(r_{0,T}) = \sigma^2 T \tag{3}$$

Where:

- $\sigma^2(r_{0,T})$: variance of the continuously compounded return from time 0 to time T
- σ^2 : variance of the one-period continuously compounded return
- T : total number of periods

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## name?? Variance of Expected Continuously Compounded Returns
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\sigma^2(r_{0,T}) = \sigma^2 T \tag{3}
```

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$$
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Where:

- * $\sigma^2(r_{0,T})$: variance of the continuously compounded return from time 0 to time T
 - * σ^2 : variance of the one-period continuously compounded return
 - * T: total number of periods
-