

Compounding  $\Rightarrow$  necessary to compare returns across different investments

$$r_{\text{annualised}} = (1 + r_{\text{period}})^C - 1$$

HPR (Holding Period Return)  $C$

1 week = 0.25%

5 weeks = x

1 month = x

$\vdots$   
 $\downarrow$

15 month = 13%

Annualized return

Advantages of annualizing:

- consistent metric for evaluating investment performance
- equates relationship between cash flows occurring at various times and dates.

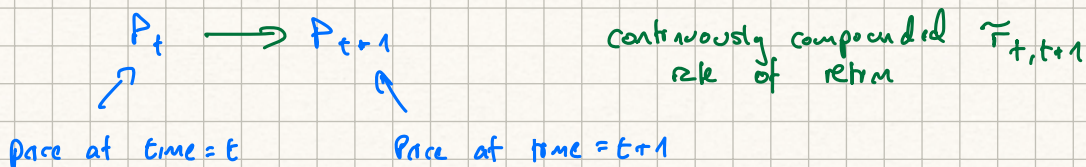
Limitations of annualizing:

- implicit assumption:

e.g. 1 week return may be extrapolated to full year

$\Rightarrow$  CONSEQUENCE: • annual performance  
+ • return variability

### CONTINUOUS COMPOUNDING



Example

| <u>Date</u> | <u>Price</u> | <u>HPR</u> ( $r_{t,t+1}$ ) | $\tilde{r}_{t,t+1}$ |
|-------------|--------------|----------------------------|---------------------|
| 31 Dec 2025 | 150          |                            |                     |
| 31 Mar 2026 | 180          |                            |                     |
| 30 Jun 2026 | 170          |                            |                     |
| 30 Sep 2026 | 175          |                            |                     |
| 31 Dec 2026 | 190          |                            |                     |

$$\hat{r}_{2026} =$$

or  $\sum$  of continuously compounded period returns