FV for Projects with many Cashflows

Example:

Today you have 100 USD in your savings account and you save another
- 10 USD in t1
- 20 USD in t2
- 50 USD in t3
- 30 USD in t4
- 25 USD in t5. (each cf at period´s end)

Calculate the **FV** of your savings account after **5 years** given an interest rate of **3%** p.a.

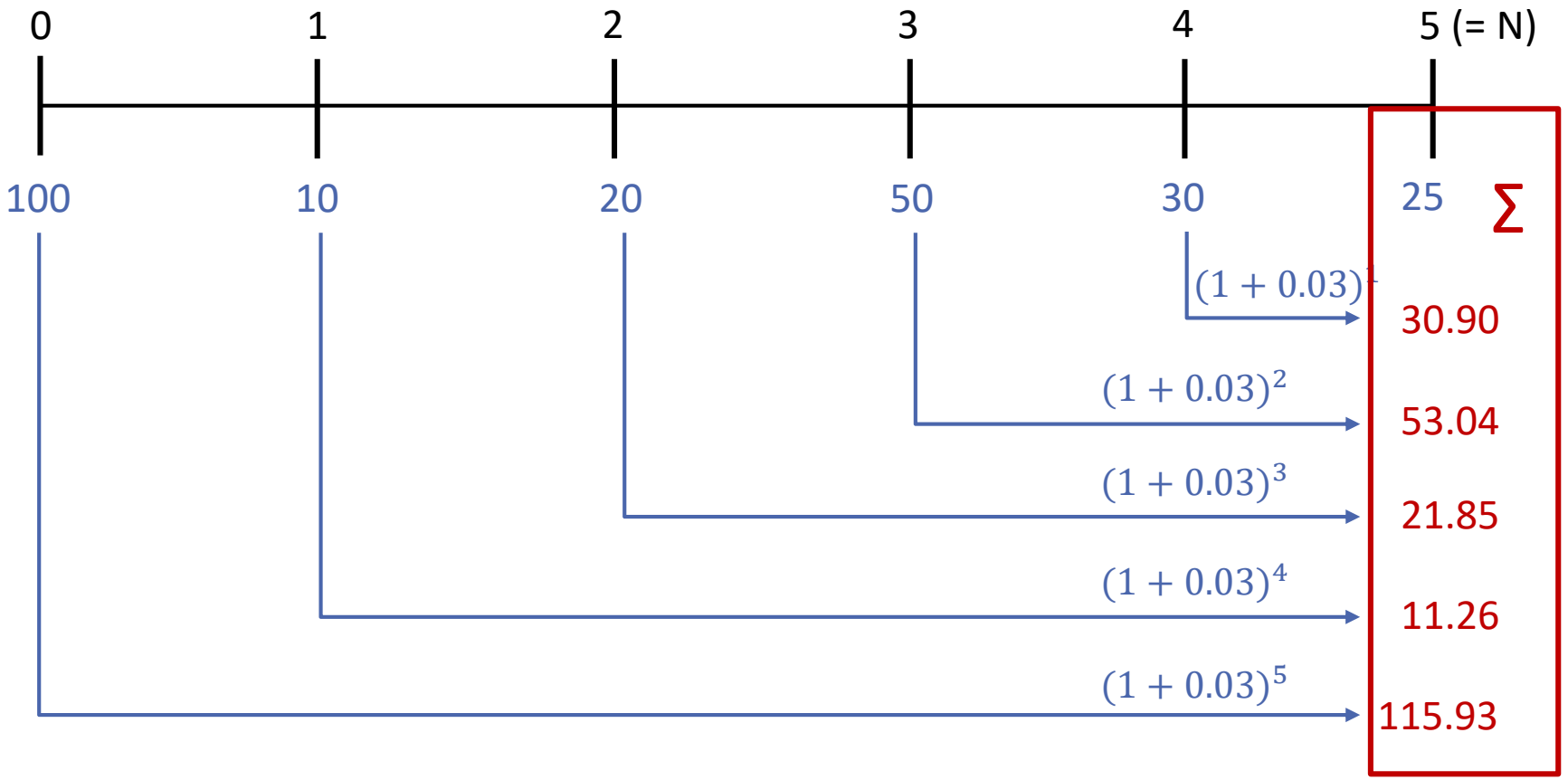
Formula:

$$FV_N = \sum_{t=0}^{N} CF_t * (1+r)^{N-t}$$

$\mathrm{FV_N}$: Future Value (at N)
$\mathrm{CF_t}$: cashflow @ timestamp t
N: Total number of periods
r: Interest Rate (per period)
t = timestamp (0, 1, …, N)

FV many CFs - Solutions

$$100(1+0.03)^5 + 10(1+0.03)^4 + 20(1+0.03)^3 + 50(1+0.03)^2 + 30(1+0.03)^1 + 25 = 257.98$$



PV for Projects with many Cashflows

Example:

Today you agreed on a payout plan that guarantees payouts of
- 50 USD in t1,
- 60 USD in t2,
- 70 USD in t3,
- 80 USD in t4,
- 100 USD in t5. (each cf at period´s end)

Calculate the Funding amount / **PV** that needs to be paid into the plan today (t0). Assume an interest rate of **4%** p.a.

Formula:

$$PV = \sum_{t=1}^{N} \frac{CF_t}{(1+r)^t}$$

PV: Present Value
CF_t: cashflow @ timestamp t
N: Total number of periods
r: Interest Rate (per period)
t = timestamp (0, 1, …, N)

PV many CFs - Solutions

$$\frac{50}{(1+0.04)^1} + \frac{60}{(1+0.04)^2} + \frac{70}{(1+0.04)^3} + \frac{80}{(1+0.04)^4} + \frac{100}{(1+0.04)^5} = 316.36$$