# Time-Weighted Return vs. Internal Rate of Return

Implementation of Performance Returns

- **Time-Weighted Return (Geometric Mean):** Used for liquid (public) investments because the fund managers do **not have** control of cash flows, RVK uses TWR on Monthly Flash Reports. Preferred method when comparing managers because it removes the "noise" of contributions and distributions.

- **Internal Rate of Return (Money-Weighted Return):** Used for illiquid (private) investments because the fund managers do **have** control of cash flows, Hamilton uses IRR on Quarterly Reports.

Time-Weighted Return

■ **Time-Weighted Return (TWR)** – Breaks up the return on an investment portfolio into separate intervals based on whether money was added or withdrawn from the investment.

Period Begin — Contribution 1 — Contribution 2 — Period End

%Return 1   %Return 2   %Return 3
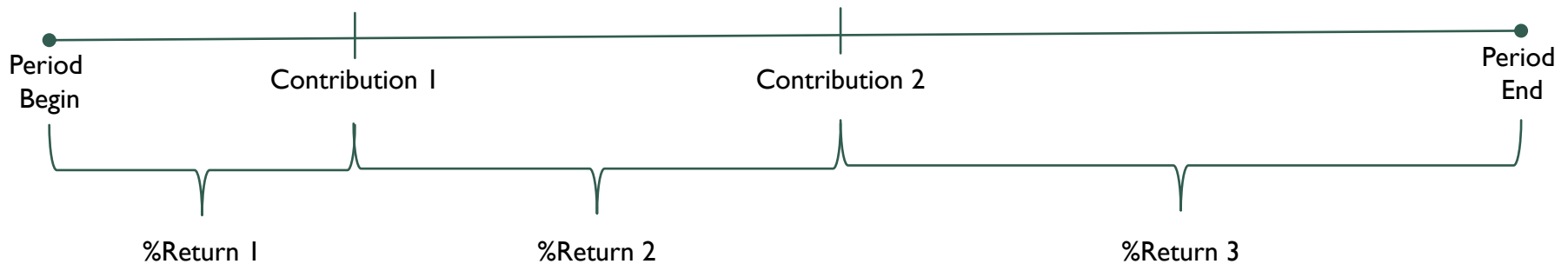
$$[(1+\%Return\ 1) \times (1+\%Return\ 2) \times (1+\%Return3)] - 1 = TWR$$

Internal Rate of Return

- **Internal Rate of Return (IRR)** – The return that would put the end of period investment value and all cash flows into Period Begin dollars so that they equal the initial investment.

- This method accounts for timing and magnitude of cash flows.

Period Begin — Contribution 1 — Contribution 2 — Period End
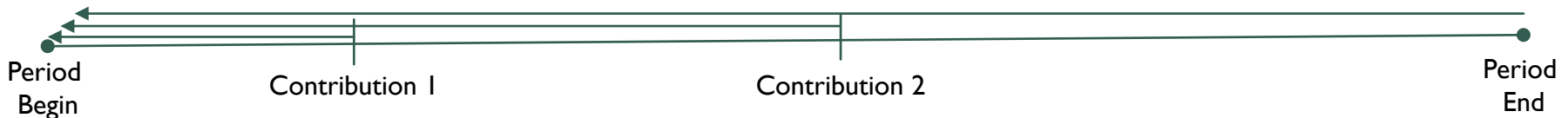
Period Begin Value − [Contribution 1/$(1+IRR)^1$] − [Contribution 2/$(1+IRR)^2$] − [Period End Value/$(1+IRR)^3$] = 0

Calculation Example

$123,200

10%

2%

$102,000
+ $10,000
$112,000
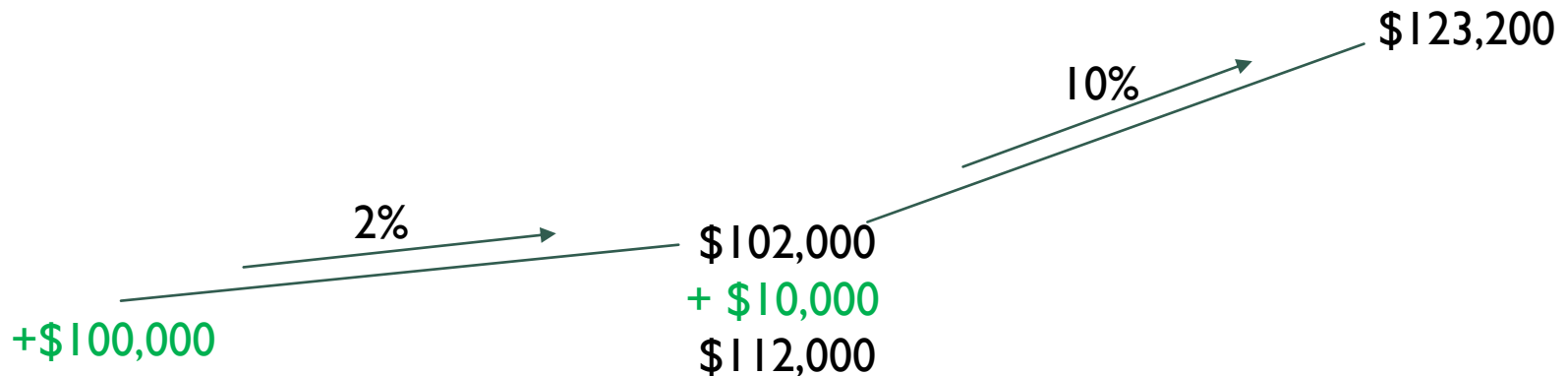
+$100,000

Calculate TWR:

[1+($102,000/$100,000)] x [1+($123,200/$112,000)] =

1.02% x 1.10% = 1.122% or **TWR: 12.2%**

Calculate IRR:

Present Value: $100,000   Future Value: $123,200

Periods: 2   Payment: $10,000

IRR: 6.11%