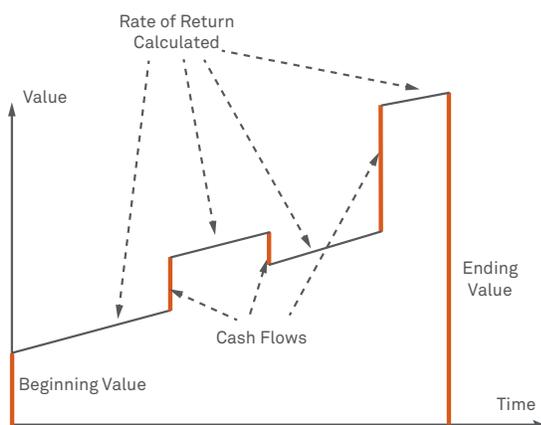


ROR Explanations

Money-Weighted Return

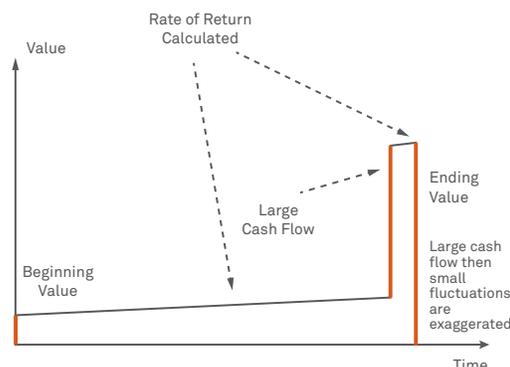
A small return on a bigger investment has more impact than a high return on a smaller investment

- › Return is sensitive to how much money is invested; when it came in and went out
- › Rate of Return (ROR) that links ending value with beginning value, plus all intermediate cash flows—hence the name money-weighted return
- › Similar in concept to a daily interest savings account, a constant daily rate of return over the entire period
- › In some cases, large cash flows can influence returns more than expected
- › Includes Internal Rate of Return and Total Period Modified Dietz, an approximation of Internal Rate of Return



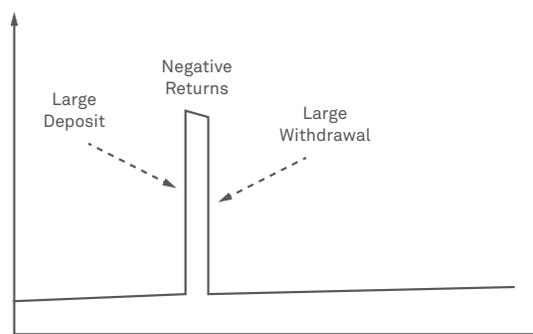
Money-Weighted return issue—large cash flow

- › Large Cash Flow near the end of the period then Small Cash Flows or price changes
- › Specific to Money-Weighted Returns
- › Because the ROR is assumed to be constant, small changes during the large balance period will have a substantial effect
- › This is most pronounced when the cash flow is more than 50% of the portfolio value
- › The cash flow itself is not the issue, but rather changes, or dividends after the large cash flow



Money-Weighted return issue—magnification effect

- › The portfolio existed for a long period of time
- › For a brief period there was a large balance
- › What happened during this high balance period will have much more effect than what happened during the low balance period
- › In fact, what happened during the high balance period will be magnified
- › Although for the majority of the time the portfolio had positive performance, the down time with a high balance may cause the overall performance to show as negative.

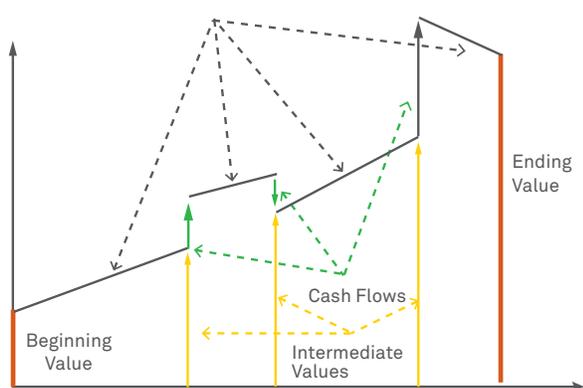


Daily Time-Weighted Return

Return is not sensitive to the amount of money invested. Return on \$1,000,000 is weighted the same as the return on \$1,000

- › Useful for comparing managers
- › Finds the return between each cash flow
- › Requires that the portfolio be valued immediately before positive cash flows and immediately after negative cash flows
- › Requires intermediate evaluations as often as there are cash flows
- › Possible to see positive return but lose value

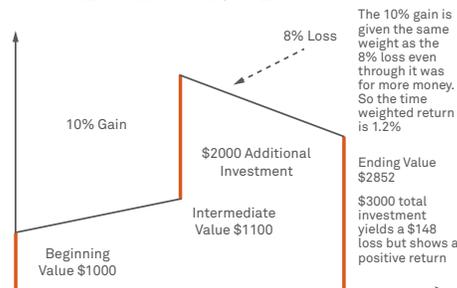
Intra Cash Flow Rate of Return Calculated



Performance Reporting Issue—Positive ROR, lost money

- › The portfolio has a positive return, during a period with a small amount of money
- › An additional investment is made, and after this investment the portfolio loses money
- › The percentage gain during the low balance period is higher than the percentage loss during the high balance period, so the time-weighted return is positive
- › More money is lost during the high balance period than is gained during the low balance period
- › An issue with Time-Weighted Returns only. This is not an issue with Dollar-Weighted, which would show a negative return in this case
- › The reverse could happen with a strong positive return with a lot of money, then withdraw money and see a large negative return on a small amount of money

A 1.2% Return After a \$148 Loss



Why doesn't Albridge just use a Simple ROR?

A simple ROR is easy to calculate, but will be misleading if there are any deposits or withdrawals.

| Deposit half way through the period | Withdrawal half way through the period |
|---|---|
| › Beginning value \$1000 | › Beginning value \$1000 |
| › Deposit \$100 | › Withdrawal \$1000 |
| › Ending value \$1100 | › Ending value \$900 |
| “Simple Return” $1100/1000-1=10\%$ | › No market performance, just a withdrawal “Simple Return” $900/1000-1=-10\%$ |
| Money-Weighted Return $=1100-1000-100/(1000+.5*100)=0\%$ | “Simple Return” $900/1000-1=-10\%$ |
| Time-Weighted Return $1100/1100*1000/1000-1=0\%$ | Money-Weighted Return $=900-1000-.5*100/(1000+.5-100)=-.16\%$ |
| A flat market looks like a 10% return | Time-Weighted Return $1000/1000*900/900-1=0\%$ |
| Simple return makes the performance look far better. | Simple return makes the performance look worse. |

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