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—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.

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

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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

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.

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

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

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QRG-ALB-ROR-8-17