

Two Ways to Calculate the Rate of Return on a Portfolio

There are two ways to compute the rate of return on a portfolio: TIME-weighted and DOLLAR-weighted (also known as internal rate of return.) These two methods can produce dramatically different results. Both are correct - they just calculate numbers that have different meanings.

Take the following two investors who invested the **same** amount of money in the **same** portfolio over the **same** period of time but had dramatically different ending values:

	<u>Mary Poortimer</u>	<u>John Goodtimer</u>
Initial deposit 1/1/2005	\$ 100,000	\$ 870,000
Gain of 30% for the year	<u>30,000</u>	<u>261,000</u>
Value 12/31/2005	130,000	1,131,000
Additional deposit 1/1/2006	<u>870,000</u>	<u>100,000</u>
Value 1/1/2006	1,000,000	1,231,000
Loss of 10% for the year	<u>(100,000)</u>	<u>(113,100)</u>
Value 12/31/2006	<u>\$ 900,000</u>	<u>\$1,107,900</u>

Both investors deposited a total of \$970,000. Mary lost \$70,000, but John gained \$137,900. Let's look at their annualized rates of return:

DOLLAR-Weighted/Internal return (loss)	(6.6%)	7.2%
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The DOLLAR-weighted/internal return is negative (6.6%) for Mary while John has a positive return of 7.2%. The DOLLAR-weighted/internal return is the rate of return the funds have to earn over the given time period to result in the ending value. One way to think of it is to ask "What annual return would I have needed to end up with to get the portfolio value I actually have?" It takes into consideration the effect of compounding over the time period.

Now let's look at their annualized rates of return under the other method:

TIME-Weighted return	8.2%	8.2%
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The TIME-weighted return is a positive 8.2% for both Mary and John. How can that be? Mary lost \$70,000 and yet she earned a positive TIME-weighted return.

It is, however, the correct TIME-weighted return. The return is calculated by dividing the ending values for each period by the respective beginning values and multiplying the results.

For Mary

- \$130,000 divided by \$100,000 is 1.3 (30% gain).
- \$900,000 divided by \$1,000,000 is 0.9 (10% loss).
- 1.3 multiplied by 0.9 is 1.17 (a 17% gain).
- Annualizing and rounding the gain results in 8.2% a year.

For John

- \$1,131,000 divided by \$870,000 is 1.3 (30% gain).
- \$1,107,900 divided by \$1,231,000 is 0.9 (10% loss).
- 1.3 multiplied by 0.9 is 1.17 (a 17% gain).
- Annualizing and rounding the gain results in 8.2% a year.

Here you have two dramatically different experiences when both investors deposited exactly the same amounts. Their TIME-weighted rates of return were exactly the same. But one had a gain and the other a loss.

How then does an investor evaluate the different rates of return? Which rate of return is right? Which is best? Actually there is no right or wrong or best – they just have different meanings.

The TIME-weighted return is a measure of the success of the *investments* but not the investor. It measures how well the investments performed. If a mutual fund has a return of 30% for one year, an investor who had money in the fund for the entire year, would have realized a 30% return. When there are no deposits or withdrawals, the TIME-weighted and DOLLAR-weighted returns are the same. The success of the mutual fund is realized by the investor.

But if an investor put money in and took money out of the mutual fund during the year, the investor would have had a different DOLLAR-weighted/internal return. **The DOLLAR-weighted/internal return is a measure of the success of the *investor* based on the timing of the deposits – the flow of dollars.** It captures the true results of the investor.

The CFA Institute recommends using the TIME-weighted method for reporting performance on professionally managed portfolios. This method is the widely accepted method for reporting performance and it is the required method when performance is advertised. AIMR reasons that it isn't within the control of the professional money manager when an investor makes deposits or withdrawals and thus they should not be measured by that.

Both TIME-weighted returns and DOLLAR-weighted/internal returns are legitimate methods of calculating returns. The user of these returns must decide what information they are looking for to determine which method provides the desired information. We provide both on our performance reports to clients.