



Educating Performance Professionals: Red Flags in Total Return Calculation

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Introduction

- 1) What is important when training your team?
- 2) Recognize possible issues
- 3) A lot can happen around large cashflows
 - > Total return calculation
 - > Gross return (fee)
 - > Attribution



Team at Robeco

- 6 team members
- At least 2 per topic: total return, fee, equity attribution, FI attribution, GIPS

A lot of different products:

- > 300 Mandates
- > 130 Strategies with 1,000 shareclasses

Total return example

Let's assume:

- 2 subsequent days with no market movement
- A portfolio has a large inflow (100 times its previous size)
- Transaction costs are 0.30%
- Important to calculate a correct time weighted return (you want to show the total track record of the “old” client)

Total return example

	NAV	Cashflow	Return
Day 0	100		
Day 1	70		-30.00%
Day 2	10,070	10,000	0.00%
<i>Overall</i>			<i>-30.00%</i>

What is happening here?

Total return example - NAV split

	NAV	Cashflow	Return		NAV Day 1
Day 0	100			Old securities	100
Day 1	70		-30.00%	New securities	9,970
Day 2	10,070	10,000	0.00%	Cash	-10,000
Overall			-30.00%	Overall	70

NAV of Day 1 is very much impacted by 0.30% transaction costs for investing new cash flow.

Total return example – postponing trades

	NAV	Cashflow	Return
Day 0	100		
Day 1	100		0.00%
Day 2	10,070	10,000	-0.30%
Overall			-0.30%

Postponing the trades gives a correct NAV that shows the end value of the old positions.

The NAV is then not impacted by costs due to new cashflow.

Total return example – would cashflow timing work?

	NAV	Cashflow	Return
Day 0	100		
Day 1	100		0.00%
Day 2	10,070	10,000	-0.30%
Overall			-0.30%

	NAV	Cashflow	Return
Day 0	100		
Day 1	10,070	10,000	-0.30%
Day 2	10,070		0.00%
Overall			-0.30%

It looks so in this example, but ...

Total return example – would cashflow timing work?

	NAV	Cashflow	Return
Day 0	100		
Day 1	100		0.00%
Day 2	10,070	10,000	-0.30%
Overall			-0.30%

	NAV	Cashflow	Return
Day 0	100		
Day 1	10,070	10,000	-0.30%
Day 2	10,070		0.00%
Overall			-0.30%

	NAV	Cashflow	Return
Day 0	97.09		
Day 1	100		3.00%
Day 2	10,070	10,000	-0.30%
Overall			2.69%

	NAV	Cashflow	Return
Day 0	97.09		
Day 1	10,070	10,000	-0.27%
Day 2	10,070		0.00%
Overall			-0.27%

... it doesn't work in real life. Take always the actual cashflow timing!!

Total return example – side step: swing pricing helps

	NAV	Cashflow	nr of shares	price	swingprice	Return
Day 0	100		1	100		
Day 1	100		1	100	100.30	0.00%
Day 2	10,070	10,000	100.70	100		0.00%
Overall						0.00%

The new client pays for transaction costs.

First step is to calculate a NAV not impacted by transaction costs; secondly a swing price must be calculated.

This client does not get 100 additional shares based on a price of 100, but only 99.70 shares based on a swing price of 100.30.

This results in returns in line with market movement and not impacted by costs of new cashflow.

Total return example - summary

- Timing of cashflow must be clear
- Depends on what is agreed as moment to invest
- It is very important to have a correct NAV at this moment
- Beware of impact of transaction costs in case of large cashflows
- Correct for this impact when needed

Other total return impacts

	NAV	Cashflow	Return
Day 0	100		
Day 1	99.80		-0.20%
Day 2	200	100	0.10%
<i>Overall</i>			<i>-0.10%</i>

Above is a simple example where the NAV missed on day 1 an amount of 0.20 and was corrected after the cashflow.

Beware that Accounting thinks in amounts and will not see this unintended impact.

Other total return impacts – gross of fees return

	NAV	Cashflow	Net Return	Fee	Gross return
Day 0	100				
Day 1	99.80		-0.20%		-0.20%
Day 2	199.80	100	0.00%	0.20	0.10%
<i>Overall</i>			<i>-0.20%</i>		<i>-0.10%</i>

Same example as previous, but now it is a fee payment of 0.20 (so NAV remains 0.20 lower).

When timing of taking fee in gross return is not in line, then also an unintended impact will occur.

Attribution impacts

	NAV	Cashflow	Return
Day 0	97.09		
Day 1	99.70		2.69%
Day 2	199.70	100	0.00%
<i>Overall</i>			2.69%

Let's assume a smaller example than earlier. What is visible in the attribution on Day 1?

Attribution impacts

	NAV	Cashflow	Return
Day 0	97.09		
Day 1	99.70		2.69%
Day 2	199.70	100	0.00%
<i>Overall</i>			2.69%

Dietz - midway	Weight	Return	Contribution
Old securities	100.00%	3.00%	3.00%
New securities	51.50%	-0.60%	-0.31%
Cash	-51.50%		0.00%
<i>Overall</i>			2.69%

Attribution impacts – Dietz alternatives

Dietz - midway	Weight	Return	Contribution
Old securities	100.00%	3.00%	3.00%
New securities	51.50%	-0.60%	-0.31%
Cash	-51.50%		0.00%
Overall			2.69%

Dietz - primo	Weight	Return	Contribution
Old securities	100.00%	3.00%	3.00%
New securities	103.00%	-0.30%	-0.31%
Cash	-103.00%		0.00%
Overall			2.69%

Dietz - ultimo	Weight	Return	Contribution
Old securities	100.00%	3.00%	3.00%
New securities			-0.31%
Cash	0.00%		0.00%
Overall			2.69%

Attribution impacts

	NAV	Cashflow	Return		NAV	Cashflow	Return
Day 0	97.09			Day 0	97.09		
Day 1	99.70		2.69%	Day 1	100.00		3.00%
Day 2	199.70	100	0.00%	Day 2	199.70	100	-0.15%
Overall			2.69%	Overall			2.85%

Attribution impacts will point you in the direction to correct the NAV.

Attribution impacts - summary

- Check on large cashflows, for instance in change in cash weight
- Change Dietz timing when needed

Key take aways

- 1) Train team to recognize possible issues
- 2) Large cashflows can impact total return calculation
- 3) Timing of cashflow must be clear; in line with moment to invest
- 4) Use checks to find issues in NAV valuation
- 5) Change Dietz timing in attribution when needed

