

R02 Performance Measure and evaluation

There are several measures and can be split into three groups.

- Absolute returns
- Relative returns
- Risk adjusted returns

Absolute Returns

These give an objective measure as to the performance usually over a 12 month period. There are three measures:

- Holding Period Return
- Money weighted Return
- Time weighted return

Holding period return

A portfolio of shares has a value on January 1 of £10,000. During the year, it pays £400 in dividend and at the end of the year it has increased in value to £11,000.

What is the annual return?

The formula is:

$$\frac{(\text{Closing value less opening value}) + \text{dividend}}{\text{Opening Value}} \times 100$$

Therefore:

$$\frac{(\pounds 11,000 - \pounds 10,000) + \pounds 400}{\pounds 10,000} \times 100 = 14\%$$

Money Period Return (MPR)

Let's suppose that in the above example the investor added a further £10,000 on July 1. The dividend stays the same but at the end of the year the portfolio was worth £22,500.

If we use the HPR formula we would get the following:

$$\frac{(\pounds 22,500 - \pounds 10,000) + \pounds 400}{\pounds 10,000} \times 100 = 129\%$$

A brilliant return but the fund manager can claim little credit as the figure has been distorted by the introduction of new money.

Two get round this problem two other measures are used:

- **Money Period Return (MPR).**
- **Time weighted return**

It is not necessary to know the formulas for R02 but candidates should know when they should be used.

- HPR is only useful if no new money has been introduced during the year
- It is a simple calculation

- MPR is used to calculate the return if new money is introduced or withdrawn during the year.
- It gives a valid return for an individual portfolio but it gives misleading results if used to compare the performance of two different fund managers.

- TPR is used to compare the performance of one manager against another as it is not affected by cash flows in or out of the fund

Performance Comparisons

Absolute measurements do not show the relative performance. For example, an annual return of 6% may look reasonable but if another manager has achieved 8% it is not as impressive.

The first comparative measure is **alpha**. This measures the performance against the expected return as indicated by the **capital asset pricing model**.

The expected performance of a fund as measured by its CAPM is 4%. If the actual return is 6% then the alpha is 2%
If the actual return had been 1% then the alpha would have been minus 3%

In summary:

- Alpha measures the performance of the fund manager against the expected return as measured by CAPM.
- It can be positive or negative.
- A positive return indicates the manager has added value.
- A negative return indicates that the manager has not added value

Performance against a benchmark

If we want to assess the relative performance the most obvious way to compare performance is against a figure agreed with the client. This might be as simple as a better return than a deposit account or to match inflation. It might also be an appropriate index. All major markets have a variety of indices which reflect the whole or a subset of the market.

Not all indices are the same and care needs to be taken in assessing what they are trying to measure. Many indices, such as the FTSE 100, are weighted by the size of the market capitalisation of the company's shares. This means that price movements in the top 10 will have a much more significant influence than companies in the lower part. This may be more reflective of the market than the economy. Other indices such as the Dow Jones do not track all the major US companies but is based on 30 representative companies.

Indices have several limitations:

- Market weighted indices will be dominated by a small number of large companies
- They reflect changes in capital value and don't take into account dividend income
- They do take into effect the costs of buying and selling.

Another method of assessing relative performance is by making **peer comparisons**. In other words, how have you done against the other guy?

There are again limitations to this.

- Whilst information about collective investments is readily available, it is more difficult to get information about portfolio management services.
- Care must be taken that we are comparing like with like. It is not useful to compare the performance of a growth to an income fund.
- The amount of new cash being made available will also make a difference in that it gives the manager new investment opportunities and may perform better than a fund which is relatively dormant in terms of cash inflows. If a fund is having cash withdrawals that will increase difficulties for the manager as it will become a forced seller of shares.
- Small funds will also be easier to run than large ones.
- The basic performance measure may not take the volatility of the fund into account.
- Consistency of performance will also be a key comparison that a crude league table may not take into account

Risk adjusted returns

The return achieved will also be influenced by the amount of risk that was taken. Put another way, if the manager decides to take more risk, is that being delivered in an increased performance? The following measures will help us to quantify this

- The Sharpe ratio
- Information ratio

Sharpe ratio

Manager A has produced a return of 15% whereas manager B has a return of 12%. On the face of it manager A has had the better performance but if A took much higher risks than B, it may be the case that B has had a better risk adjusted return.

The Sharpe ratio enables us to compare the two. The formula is

Return – risk free return
Standard deviation of the portfolio

Risk free return is usually the return on Treasury Bills which for this example we'll take as 1%

In comparing these two managers we've found out that A's standard deviation was 8% whereas with B it was 5%

Manager A

$$\frac{15\% - 1\%}{8\%} = 1.75$$

Manager B

$$\frac{12\% - 1\%}{5\%} = 2.2$$

We conclude that manager B generated a higher return on a risk adjusted basis. The idea of the ratio is to see how much additional return you are receiving for the additional volatility of holding the risky asset over a risk-free investment.

It is considered that a ratio of 1 or better is good, 2 or better is very good and 3 or better is excellent. The Sharpe Ratio is usually positive. It could be negative if the fund performance was less than the risk-free return

The Information Ratio

Its aim is to identify the consistency of a fund manager in matching or beating the chosen benchmark. Unlike the Sharpe ratio it is calculated over a longer period than 1 year.

The formula is:

Portfolio Return less Benchmark return Standard Deviation of Tracking error

The bottom line is often referred to simply as the Tracking Error.

The best way to understand it is to show an example

Year	Portfolio Performance (A)	Benchmark Performance (B)	Excess Return A-B
1	5%	3%	2%
2	-2%	-4%	2%
3	5%	2%	3%
4	-3%	-5%	2%
5	25%	23%	2%
6	8%	8%	0%
7	4%	6%	-2%
8	2%	-3%	5%
9	5%	3%	2%
10	5%	5%	0%
Mean return	5.2%	3.5%	
SD of excess returns			1.9%

- The average return of the portfolio over 10 years is 5.2%
- The average return of the benchmark fund over 10 years is 3.5%
- The mean of the difference in returns has been calculated together with the SD

The information ratio is $\frac{5.2\% - 3.5\%}{1.9\%} = 0.86$.

Interpreting IR

A manager of a similar fund might also have achieved an average return of 5.2% against their selected benchmark of 3.5%. However their annual returns tended to differ more widely from the benchmark, in other words their returns were more volatile. As a result the SD of the average difference was 2.44%

The IR would be $\frac{5.2\% - 3.5\%}{2.44\%} = 0.7$

IR is designed to assess the consistency of a fund manager. The higher the IR the more consistent the performance.

It is possible to have a negative IR and this would occur if the fund manager failed to beat the benchmark.

As a general rule:

- A positive IR is considered to be above average
- 0.5 is considered good
- Above 1 is exceptional