

# Components of Expected Return

While there are many variations of portfolio theory, they all begin by separating expected returns into two categories:

- Time value of money
- Investment risk or Risk Premium

The time value of money is comprised of:

- Opportunity Cost or Real Rate of Return PLUS
- Inflation Premium

These two rates together form the **risk-free rate**. It is called the risk-free rate because every investment is subject to this risk. By comparison, the investment risk or Risk Premium varies with every investment.

Therefore the expected return on an investment is equal to the risk-free rate plus the risk premium.

$$\text{Rate of Return} = \text{Risk-Free Rate} + \text{Risk Premium}$$

## Calculating the Risk-Free Rate

The Risk-free rate is the sum of the real rate of return (opportunity cost) and the inflation premium

- The real rate of return is referred to as:  $r_{\text{real}}$
- The inflation premium is referred to as:  $r_{\text{inflation}}$
- The risk free rate is referred to as:  $r_{\text{free}}$

$$r_{\text{free}} = r_{\text{real}} + r_{\text{inflation}}$$

- The real rate of return is closely tied to the growth rate of the economy, so many investors use real GDP growth as a proxy (or substitute) for  $r_{\text{real}}$ .
- Most investors also use *expected* inflation to gauge  $r_{\text{inflation}}$ .

## Calculating the risk premium

In addition to the opportunity cost and inflation risk (ie, the risk-free rate), every investment is also subject to a risk premium. The risk premium is comprised of two types of risk: systematic risk and unsystematic risk.

**Systematic risk** (also called market risk) is the risk inherent in investing in a particular market or asset class. It is the risk that the value of your investment will be negatively affected by declines in the values of other similar investments.

- It affects every type of investment within that market or asset class, and cannot be eliminated through diversification.
- Systematic risk can be reduced – but not eliminated – by diversifying a portfolio among different markets and asset classes.

**Unsystematic risk** (also called security-specific risk) is the risk specific to each individual security within a market or asset class.

- It is different for each security within a given market
- Unsystematic risk can be reduced or even eliminated through diversification

Adding the concept of systematic and unsystematic risk, we can expand the definition of expected return as follows:

$$\text{Rate of Return} = \text{Risk Free Rate} + \text{Systematic Risk} + \text{Unsystematic Risk}$$

OR

$$\text{Rate of Return} = \text{Risk Free Rate} + \text{Market Risk Premium} + \text{Security Risk Premium}$$