



Calculating Stock Returns



What is Return?



Return refers to the amount of money you make from your investment, expressed in % terms.

Consider an example...



Imagine you buy stock in Facebook (FB)
for \$160 and sell it for \$192.73

What is your profit & what is your return?

Profit vs. Return



Profit shows you the \$ / £ you earn from an investment.

Return (" r ") shows you the same information in % terms.

Profit on your investment



Profit = Selling Price – Purchase Price

$$\text{Profit} = P_{t+1} - P_t$$

$$\text{Profit} = \$192.73 - \$160$$

$$\text{Profit} = \$32.73$$

Return on your investment



$$r = \frac{P_{t+1} - P_t}{P_t}$$

$$r = \frac{\$192.73 - \$160}{\$160}$$

$$r = \frac{\$192.73}{\$160} - 1$$

$$r \approx 0.2046 = 20.46\%$$

P_{t+1} = Selling Price

P_t = Purchase Price

r = Return

Return on your investment



$$r = \frac{P_{t+1} - P_t}{P_t}$$

$$r = \frac{P_{t+1}}{P_t} - \frac{P_t}{P_t}$$

$$r = \frac{P_{t+1}}{P_t} - 1$$

Return of a stock

$$r_j = \frac{P_{t+1} - P_t}{P_t} \equiv \frac{P_{t+1}}{P_t} - 1$$

Where:

r_j = Return on a stock j

P_t = Price of the stock at time t

P_{t+1} = Price of the stock at time $t+1$

Returns With Dividends Example



Imagine you buy 67 shares of Apple (AAPL) at \$149.04, earn dividends of \$0.63 per share for 4 quarters, then sell your shares for \$191.03 each.

What is your profit & what is your return?

Profit with Dividends



Profit = Selling Price + Dividends – Purchase Price

$$\text{Profit} = P_{t+1} + Div_{t+1} - P_t$$

$$\text{Profit} = \$191.03 + (\$0.63 \times 4) - \$149.04$$

$$\text{Total Profit} = \$44.51 \times 67 \text{ shares} = \$2,982.17$$

Return with Dividends



$$r = \frac{P_{t+1} + Div_{t+1} - P_t}{P_t}$$

$$r = \frac{\$191.03 + (\$0.63 \times 4) - \$149.04}{\$149.04}$$

$$r = \frac{\$193.55}{\$149.04} - 1$$

$$r \approx 0.2986 = 29.86\%$$

Return with Dividends



$$r = \frac{P_{t+1} + Div_{t+1} - P_t}{P_t}$$

$$r = \frac{P_{t+1} + Div_{t+1}}{P_t} - \frac{P_t}{P_t}$$

$$r = \frac{P_{t+1} + Div_{t+1}}{P_t} - 1$$

Return of a stock

$$r_j = \frac{P_{t+1} + Div_{t+1} - P_t}{P_t} \equiv \frac{P_{t+1} + Div_{t+1}}{P_t} - 1$$

Where:

r_j = Return on a stock j

P_t = Price of the stock at time t

P_{t+1} = Price of the stock at time $t+1$

Div_{t+1} = Dividend paid at time $t+1$

Summary

Profit is the \$ / £ you earn from an investment. Return is the same information, expressed in % terms.

The return on a non-dividend paying stock is calculated as:

$$r = \frac{P_{t+1} - P_t}{P_t} \equiv \frac{P_{t+1}}{P_t} - 1$$

For a dividend paying stock, the return is calculated as:

$$r = \frac{P_{t+1} + Div_{t+1} - P_t}{P_t} \equiv \frac{P_{t+1} + Div_{t+1}}{P_t} - 1$$

Now have a go
at the quiz!

