

## PER

### Definition

Price Earning Ratio (PER or P/E) is a financial indicator used to value publicly quoted firms. As indicated in the name, the PER is computed as by dividing the stock price by earnings per share (EPS):

$$PER = \frac{\text{Stock price}}{\text{Earnings per share}}$$

Equivalently, PER is equal to the ratio of market capitalization (stock price  $\times$  number of shares issued) over earnings.

More precisely, the stock price corresponds to the latest transaction price observed in the market, and earnings per share to net profit after taxes divided by the number of shares issued by the firm. In practice, there are several ways to define earnings: last year earnings (historical PER), average of earnings over the last four quarters (moving average PER) or expected earnings for the current year (projected PER).

### PER interpretation

A PER of 10 (for example) indicates that the market capitalization of the firm is equal to 10 times its earnings.

A PER of 10 also indicates that an investor has to wait 10 years for the distributed dividends to make up the initial cost price of the stock (by assuming that future earnings are constant and completely distributed to shareholders). The PER then corresponds to the pay-back period of the investment in the stock.

### Use of PER: stock valuation

Remember that a stock confers the right to receive future dividends. The stock value estimate can then be computed by discounting the cash flows of future dividends received by the shareholder:

$$\text{Stock value estimate} = \sum_{t=1}^{+\infty} \frac{DIV_t}{(1+r)^t}$$

where  $DIV_t$  represents the dividend per share paid at time  $t$  and  $r$  the discount rate.

Note that this approach based on discounting cash flows requires to determine the sequence of dividends and the discount rate; this is a complex exercise because it requires a good knowledge of the firm to model investment cash flows on the assets side and also to estimate economic and financial risks that determine the value of the discount rate.

A simpler approach consists of using the PER formula in the following manner:

$$\text{Stock value estimate} = \text{PER} \times \text{Earnings per share}$$

where PER represent the *expected* PER for the firm.

The knowledge of *expected* PER and earnings per share provides an estimate of stock value.

This valuation method can be used for the *Blé de France* simulation. A PER of 10 and an EPS of €10 gives a stock value estimate of €100; furthermore, this stock value estimate is in line with the stock price currently observed in the market for *Blé de France*.

If the PER can be considered as constant over time (hypothesis of the valuation model), a variation of EPS should lead to a proportional variation in the stock price. The *Blé de France* simulation will allow you to verify if it is the case or not.

### **Use of PER: stocks comparison**

In practice, the PER can also be used to determine if a stock is expensive or cheap. The higher the PER, the more expensive the stock price should be judged. For example, other things being equal, a stock with a PER of 50 will be considered as more expensive than a stock with a PER of 10. However, other things are rarely equal, and other firm characteristics such as the growth rate of earnings and the level of risk over future earnings can explain differences in PER from one firm to another. For example, promising start-ups (in particular in the field of new technologies) present very high PER (sometimes higher than 100!) because the market anticipates very high profits in the coming years.

As all financial analysis ratios, the PER of a given firm should be compared to the PER of firms in the same business sector (sector PER), which present similar characteristics in terms of growth and risks. The time-evolution of the PER of a given firm should also be looked at in order to situate its PER between its lowest and highest historical values.

### **Limits of PER**

If the computation of the PER is easy from a technical point of view (a simple division!), its interpretation and use (as an investment criteria) are often more difficult (see the remark above).

Moreover, in order to obtain a relevant value for the PER, earnings per share have to be restated before. Two restatements are usually done:

- At the level of earnings: net profits have to be computed without extraordinary results and non-recurring (at operational level).
- At the level of the number of shares: it has to take into account future operations on the firm equity (exercise of warrants, conversion of convertible bonds, shares buy-back, etc.), which have an impact on the number of shares issued by the firm.

Then, PER is influenced by the financial structure of the firm.

Finally, the PER is not defined for firms with negative accounting results.