

How much, what and for how much? A break-even point analysis may provide the answer

An entrepreneur's essential equipment should include knowing how many goods or services he must sell to at least cover his costs. One of the simplest yet very effective tools in financing and financial management is the break-even point analysis, which can answer these questions.

Cost types

Before we get into the analysis of the turning point (Break-Even Point, BEP analysis), we must first clarify what costs are incurred in the company. We can divide them into three groups:

- entry,
- fixed a
- variable.

Entry (investment) costs are those that the entrepreneur pays only once, at the beginning of the business, or when expanding to an entirely new market or including a new product in the portfolio. They are necessary to get the business off the ground.

Fixed costs must be paid by the business regularly, regardless of how well it is doing. Even if it doesn't sell a single product, it doesn't send a single shipment or serve any customers.

Conversely, variable costs rise and fall depending on how much is produced and sold to customers.

Unfortunately, we cannot unequivocally say that a specific cost will always be an entry, fixed or variable, which somewhat complicates the situation. Each cost item, therefore, needs to be subjected to two tests:

- 1) Is the cost one-time and related to the start-up of the business (and not to its operation)?

If the answer is yes, then it is an input cost. If not, you need to ask yourself the second question:

- 2) Will this cost be reduced if we make and sell one less product?

If so, the load is variable. If not, it is a fixed cost. While variable costs fall and rise with each additional customer served and product sold, fixed costs do not change, rise, or fall in leaps and bounds.

The usual entry costs include, for example, a notary's fee for drawing up a partnership agreement, a broker's commission for negotiating an office lease, creating a website, taking the first photo of products, posting an advertisement when looking for employees, and the like. Of course, some of these events happen repeatedly, but mostly irregularly and one-time. However, each listed example can be variable in specific businesses – notary registrations for a company that sells turnkey companies, commissions to brokers in a real estate office, website creation and product photography in an advertising agency, posting an ad with a headhunter.

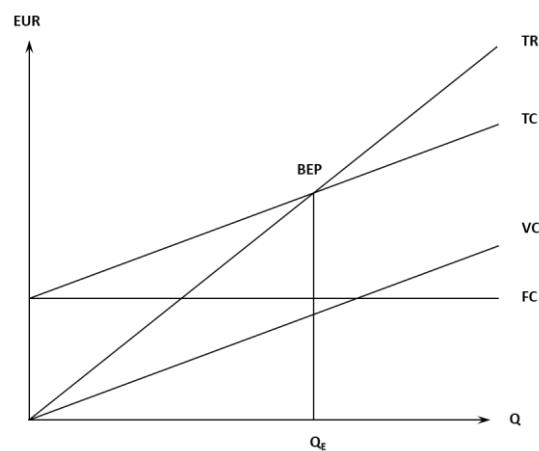
Fixed costs are paid by the company regularly, at predetermined time intervals and regardless of the amount of production. When they move because of the production volume, then in leaps and bounds, for example, when it is necessary to increase the capacity of production or warehouse, or vice versa, when there is nothing left to produce and sell, so "the last one goes out". The most common fixed costs are rents, depreciation of purchased property, wages stipulated in the contract, lighting of the production hall, and the like. A fixed cost does not mean that the amount paid does not change. Of course, this can happen due to inflation, changes to the contract with the supplier or automation of production thanks to the purchase of

new machines. However, the important thing is that the amount does not change because of how much the company produces and sells.

Variable costs, on the other hand, are characterized by the fact that they constantly change according to the production volume. The more a business creates and delivers to customers, the higher they are. For a beautician, a variable cost is a peeling mask and other cosmetic products used to treat one customer. For a company that manufactures toys, variable costs are wood and screws. In an e-shop, a variable cost is, for example, the purchase price of the goods sold or postage.

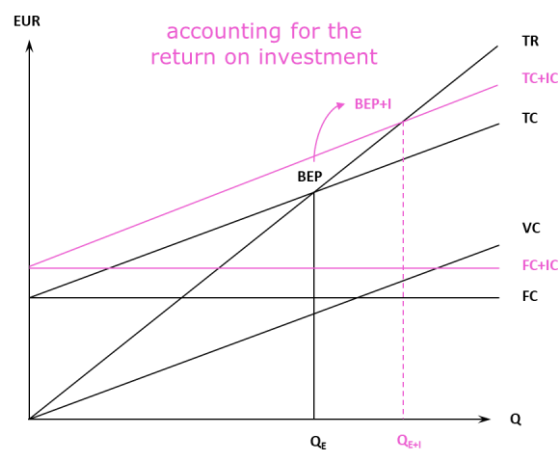
Break-even point analysis

Break-even analysis puts all costs into context and compares them to the revenue the business collects from its customers. The basic idea is simple – how many products does the company have to sell to cover at least fixed and variable costs? The production volume at which this situation occurs is called the break-even point. Up to this point, the business is at a loss, after which a profit is generated.



If we denote the quantity of products by Q , then total sales (TR) grow with each product sold at a rate of $P \times Q$, where P is the price. Fixed costs (FC) are constant and must all be converted to the same period, even if paid at different intervals. For example, quarterly payments must be converted to months so that all items relate to the same period. Variable costs (VC) also increase with the quantity, and when we add it to fixed costs, we get total costs (TC). The point where total costs intersect with total revenues is the break-even point.

If we want to find out where the break-even point is when factoring in input costs, the required rate of return over a certain period of time must be determined. This increases total cost and shifts the break-even point to the right to more product.

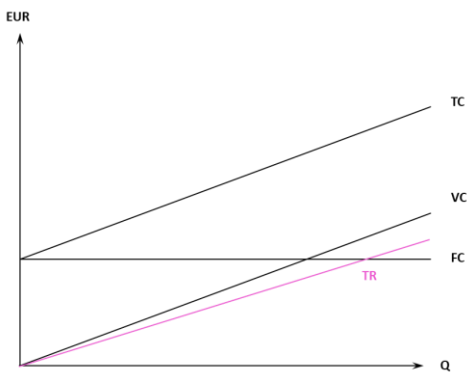


Outputs from the analysis

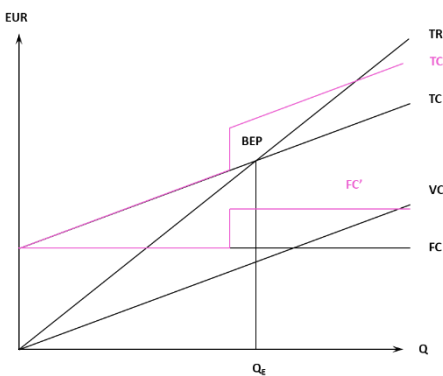
Break-even analysis is a simple guidance tool that can quickly alert entrepreneurs to the most fundamental risks associated with financing and financial management. The most common warning signs include the following situations:

- sales do not even cover variable costs, so the business never reaches the break-even point and profits, and even increases the loss with the sale of each additional product (a),
- fixed costs would increase by leaps and bounds even before the break-even point is reached, because the company does not have sufficient production capacity and would have to increase it, which at the same time delays the break-even point (b),

a)



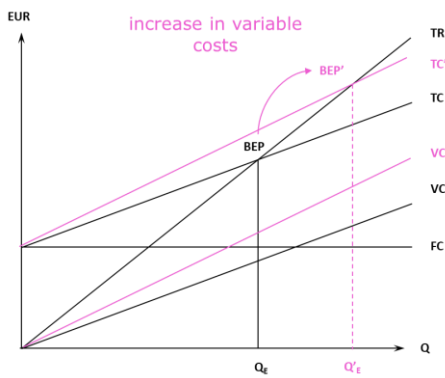
b)



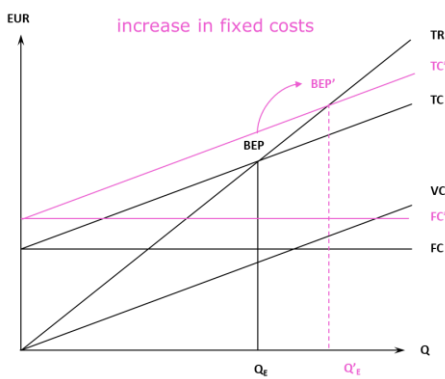
But the analysis of the turning point can also be used to model changes in the market and the company, for example, how they will manifest themselves:

- increase in variable costs (c)
- increase in fixed costs (d)
- price increase(s)

c)



d)



e)



Limits of break-even analysis

Break-even analysis is not self-defeating and, of course, has certain limitations. It is often challenging to separate costs into fixed and variable, and the course of costs and revenues may not be linear, as businesses usually use volume discounts, wholesale tariffs and discounted packages. The analysis does not show cash flow but refers exclusively to products sold, so it does not consider production made for storage. It is also optimal for one product because once the portfolio is more complex, it is necessary to calculate the costs, create an analysis for each product separately, or work with aggregate sales and not with the sale of individual products.

Despite these limitations, the BEP analysis is simple and clear, investors understand it, and it is ideal for obtaining a basic overview of the company's costs and revenues.