PROFIT SENSITIVITY IN THE DECISION-MAKING PROCESS

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Abstract
Projections on the profitability of an entity is a prerequisite impact assessment of implementing various management strategies. The literature did not include a model sensitivity analysis in terms of profit margin of safety modification and safety coefficient. This article aims to explicit solutions for identifying the factors that influence the sensitivity of profit, the proposed analytical models to change the margin of safety (physical and value) and coefficient of safety. The model allows the determination of limits that can increase or decrease sales costs so that the company remains profitable, ie to be able to maintain an adequate level of profit. This analysis allows knowing the influence of each factor in the evolution of the profitability of the entity, allowing managers to adopt the right decisions based on the importance of the influence of the analysis results of the entity. To facilitate understanding of the proposed analytical model is presented a case study.
Keywords: safety margin, safety coefficent, profit sesitivity.
Jel Codes: G32, D24, D78

Introduction

World economy is going trough a very difficult period characterized by fragility and significant risks, amid declining consumption. Under these conditions, the entities are attentive to any change that occurs in their activity, and their concern is achieving objectives in accordance with market evolution.

The information that the managers take into account in the decision-making process are useful only if their use leads to the achievement of set out objectives. Their role is to allow the entities to produce only what they can sell, in the quantities accepted by clients, the closest to market needs.

Due to the increasing competitiveness, the entities are attentive to any change, no mater how insignificant it can seem and they are looking to evaluate the impact it can have in the obtained results.

Managers' reaction speed depends also on knowing the influence of each factor on the profitability of the entity. Increases or declines of the quantity produced and sold, sell price, variable costs or fix costs can determine a reevaluation of the structure of the activity, depending on their influence on the evolution of the entity.
The entities use the breakeven to determine the minimum quantity of products that has to be produced and sold in such a way that the entity to not record loss. What ever breakeven surpass represents profit, and any fall under breakeven represents loss. In this way the breakeven becomes a land mark in the activity of an entity. The higher the activity volume to the breakeven, the profitable the entity is.
The difference between the real volume of activity and the volume of activity at breakeven level is called safety margin when it is positive or necessity margin when it is negative; safety margin because it shows us how much the sales can decline so the entity not to fall on loss, and necessity margin because it informs us how much the sales must increase in order to achieve profit.
The term "breakeven" is improper used because we are not really interested in the profitability but in the size of the profit. If the realized profit is low the activity of the entity can be considered really profitable (Iacob, Ionescu y Avram, 2013). That is why other terms can be used, of which the most adequate, in our opinion, would be "dead point".
The impact of managers' decisions can be observed in the change of the breakeven, in the change of the turnover and therefore in the change of the safety margin and an analysis of the influence of the factors' behavior on these changes can rekindle aspects as:

- What impact does the growth with a certain level of the variable costs or fix costs have on the result of the entity?
- How will the result evolve if the crafted and sold production changes?
- How does the change of price influence the obtained result?

Clarifying these aspects allow the entity to adopt some decisions based on taking into account several scenarios and knowing the influence of each factor of the analyzed ones on the obtained results.
Starting from a breakeven analysis model proposed by Păvăloaie et al (2010) there are proposed two new models which analyze the change of the safety margin and the safety coefficient, presenting the analysis of the influence of each factor on the dynamics of these indicators.

Review of the specialized literature

The profit sensitivity analysis is a technique used by "direct costing" method to examine how the result will evolve in case of several scenarios.
Although the elements of this method were since 1899 by the German economist Schmalenbach, then by J. Fr. Schar y Donaldson Brown in 1923 and by W. Hasenack in 1929 (Caraiani, Dumitrana et al, 2005), the term "direct costing" was used for the first time by J. Harris in 1936 in the work called "What did we earn

last month?" from NACA (National Association of Cost Accountants) Bulletin, concept continued by Raun (1951) and Neikirk (1951).
Later Charnes, Cooper y Ijiri (1963) presents the use of linear programming in the profitability analysis. Jaedicke and Robichek (1964) incorporate the factor of variability in included parameters in this analysis so it helps at taking decisions and to more accurate estimations regarding the risks it implies; the model is later corrected by Ferrara, Hayya, y Nachman (1972).
After the model was criticized because its simplicity, Manes (1966) adds to the model the cost of invested capital, so it integrates the analysis of the balance point with the capital budget. Preoccupied with the improvement of the model Johnson y Simik (1971) presents a cost-volume-benefit analysis model the sells appear randomly by a variance-covariance matrix which collects the interdependences between the demands of products, the other variables remaining constant; the model presents as results the probabilities for certain levels of expected profit.
From its appearance until now, the cost-volume-benefit model has generated preoccupations of continuous improvement, to this contributing authors as Dickinson (1974), Hilliard y Leitch (1975), Magee (1975), Nash (1975), Adar, Barnea, şi Lev (1977), Mcintyre (1977), Shih (1979), Brockett, Charnes, Cooper y Shin (1984), Cooper y Kaplan (1988), Bright, Davies, Downes y Sweeting (1992).
Relatively recent, Gonzales (2001) extends the cost-volume-benefit analysis to a model with more products searching to optimize the results by using an ABC system.
The most recent contributions are those of authors like Chrysafis and Papadopoulos (2009) who present the incertitude of the variables of the model by using fuzzy logic.
Regardless of the method's cost-volume-benefit model, its advantages are indisputable in determining the short-term earnings of an entity (Topor et al, 2012, Topor, 2014) and in managerial decision-making (Briciu, 2006; Briciu y Sas, 2008; Briciu, Căpuşneanu y Căprariu, 2013).

Profit sensitivity analysis

The sensitivity analysis examines how sensitive is the profit when there are changes in assumptions. So, before choosing one of the available options it is analyzed the decisions' "sensitivity" to the change of the basis assumptions.
By the sensitivity analysis is examined the change of the result by changing the work assumptions. Evaluating profit's sensibility in relation with different possible situations allows us to understand what might happen before making a decision.
The instability of the profit is higher when the volume of activity is near the breakeven, a little variation of the turnover determining a great variation of the profit.

Safety margin

An aspect of the sensitivity analysis is the safety margin, that is the amount by which the income may decrease so the entity to not enter in the loss area (reaching

the breakeven). Physically expressed, the safety margin is equal with the difference between the sold quantity and the quantity needed to reach the breakeven.
The safety margin is determined as it follows:

– in value, in units of currency: $M_{s_{(lei)}} = CA - CA_{cr.}$ (1)

– physically, in units of measure: $M_{s_{(f)}} = q - q_{cr.}$ (2)

The utility of calculating the safety margin is residing from the answer that it gives the question "How much the sales would decrease (in value or physically), so that the entity to not record loss?". So, in specific cases, for example releasing better competitive products by the competition, the safety margin gives essential information for the entity about the interval in which could decrease and the entity would remain profitable.

A. Deviation of safety margin

Starting from a model presented in the case of total breakeven deviation (Păvăloaie et al, 2010), we propose a model of analysis of the influence of the factors that determine the change of the safety margin as it follows:

I. Physically, in units of measure:

$$\begin{aligned}\Delta_{M_{s_{(f)}}} &= M_{s_{(f)1}} - M_{s_{(f)0}} = (q_1 - q_{cr_1}) - [(q]_0 - q_{cr_0}) = \\ &= \left(q_1 - \frac{CF_1}{p_1 - c_{v_1}}\right) - \left(q_0 - \frac{CF_0}{p_0 - c_{v_0}}\right)\end{aligned} \tag{3}$$

We re-write the relation and we have:

$$\begin{aligned}&\Delta_{\downarrow}\left(M_{\downarrow}(s_{\downarrow}((f)))\right) = (q_{\downarrow}1-[(CF)]_{\downarrow}1/(p_{\downarrow}1-[(c_{\downarrow}v)]_{\downarrow}1)) - (q_{\downarrow}0-[(CF)]_{\downarrow}0/ \\ &/(p_{\downarrow}0-[(c_{\downarrow}v)]\ \ 0)) + (q_{\downarrow}0-[(CF)]_{\downarrow}0/(p_{\downarrow}1-[(c_{\downarrow}v)]_{\downarrow}0)) - (q_{\downarrow}0-[(CF)]_{\downarrow}0/ \\ &/(p_{\downarrow}1-[(c_{\downarrow}v)]\ \ 0)) + \dots + (q_{\downarrow}0-[(CF)]_{\downarrow}0/(p_{\downarrow}1-[(c_{\downarrow}v)]_{\downarrow}0))\end{aligned} \tag{4}$$

We re-arrange the terms and the relation becomes:

$$\begin{aligned}&\Delta_{\downarrow}\left(M_{\downarrow}(s_{\downarrow}((f)))\right) = (q_{\downarrow}0-[(CF)]_{\downarrow}0/(p_{\downarrow}1-[(c_{\downarrow}v)]_{\downarrow}0)) - (q_{\downarrow}0-[(CF)]_{\downarrow}0/ \\ &/(p_{\downarrow}0-[(c_{\downarrow}v)]\ \ 0)) + (q_{\downarrow}0-[(CF)]_{\downarrow}0/(p_{\downarrow}1-[(c_{\downarrow}v)]_{\downarrow}1)) - (q_{\downarrow}0-[(CF)]_{\downarrow}0/ \\ &/(p_{\downarrow}0-[(c_{\downarrow}v)]\ \ 0)) + \dots + (q_{\downarrow}0-[(CF)]_{\downarrow}1/(p_{\downarrow}1-[(c_{\downarrow}v)]_{\downarrow}0))\end{aligned} \tag{5}$$

The deviation of the safety margin in two different periods is due to:

– change of prices:

$$\Delta_{p_{Ms}} = \left(q_0 - \frac{CF_0}{p_1 - c_{v_0}}\right) - \left(q_0 - \frac{CF_0}{p_0 - c_{v_0}}\right) = \frac{CF_0}{p_0 - c_{v_0}} - \frac{CF_0}{p_1 - c_{v_0}} \quad \text{(u.m.)} \qquad (6)$$

– change of the variable cost per unit:

$$\Delta_{c_{v_{Ms}}} = \left(q_0 - \frac{CF_0}{p_1 - c_{v_1}}\right) - \left(q_0 - \frac{CF_0}{p_1 - c_{v_0}}\right) = \frac{CF_0}{p_1 - c_{v_0}} - \frac{CF_0}{p_1 - c_{v_1}} \quad \text{(u.m.)} \qquad (7)$$

– change of the fixed costs:

$$\Delta_{CF_{Ms}} = \left(q_0 - \frac{CF_1}{p_1 - c_{v_1}}\right) - \left(q_0 - \frac{CF_0}{p_1 - c_{v_1}}\right) = \frac{CF_0}{p_1 - c_{v_1}} - \frac{CF_1}{p_1 - c_{v_1}} \quad \text{(u.m.)} \qquad (8)$$

– change of the volume of the activity :

$$\Delta_{q_{Ms}} = \left(q_1 - \frac{CF_1}{p_1 - c_{v_1}}\right) - \left(q_0 - \frac{CF_1}{p_1 - c_{v_1}}\right) = q_1 - q_0 \quad \text{(u.m.)} \qquad (9)$$

II. In value, in units of currency:

$$\Delta_{M_{s_{VT}}} = M_{s_{VT1}} - M_{s_{VT0}} = (CA_1 - CA_{cr_1}) - (CA_0 - CA_{cr_0}) =$$
$$= \left(q_1 * p_1 - \frac{p_1 * CF_1}{p_1 - c_{v_1}}\right) - \left(q_0 * p_0 - \frac{p_0 * CF_0}{p_0 - c_{v_0}}\right) \qquad (10)$$

We proceed in the same way and we obtain the influence of the factors on safety margin deviation in the analyzed periods, which is due to:

– change of prices:

$$\Delta_{p_{Ms}} = \left(q_0 * p_1 - \frac{p_1 * CF_0}{p_1 - c_{v_0}}\right) - \left(q_0 * p_0 - \frac{p_0 * CF_0}{p_0 - c_{v_0}}\right) =$$
$$= q_0 * (p_1 - p_0) + \frac{p_0 * CF_0}{p_0 - c_{v_0}} - \frac{p_1 * CF_0}{p_1 - c_{v_0}} \quad \text{(lei)} \qquad (11)$$

– change of the variable cost per unit:

$$\Delta_{c_{v_{Ms}}} = \left(q_0 * p_1 - \frac{p_1 * CF_0}{p_1 - c_{v_1}}\right) - \left(q_0 * p_1 - \frac{p_1 * CF_0}{p_1 - c_{v_0}}\right) =$$
$$= \frac{p_1 * CF_0}{p_1 - c_{v_0}} - \frac{p_1 * CF_0}{p_1 - c_{v_1}} \quad \text{(lei)} \qquad (12)$$

– change of the fixed costs:

$$\Delta_{CF_{Mc}} = \left(q_0 * p_1 - \frac{p_1 * CF_1}{p_1 - c_{v1}}\right) - \left(q_0 * p_1 - \frac{p_1 * CF_0}{p_1 - c_{v1}}\right) = = \frac{p_1 * CF_0}{p_1 - c_{v1}} - \frac{p_1 * CF_1}{p_1 - c_{v1}} \quad \text{(lei)} \qquad (13)$$

– change of the volume of the activity:

$$\Delta_{q_{Mc}} = \left(q_1 * p_1 - \frac{p_1 * CF_1}{p_1 - c_{v1}}\right) - \left(q_0 * p_1 - \frac{p_1 * CF_1}{p_1 - c_{v1}}\right) = = p_1 * (q_1 - q_0) \quad \text{(lei)} \qquad (14)$$

Safety coefficient

Another indicator that is relevant for the analysis of the profit sensitivity is the safety coefficient which shows us how much the sales can relatively decrease for the enterprise to enter in the loss area.

The safety coefficient is also called ratio of safety margin (Caraiani, Dumitrana et al, 2005).

The safety coefficient is determined as it follows:

$$K_s = \frac{CA - CA_{cr.}}{CA} * 100 \qquad (15)$$

This relation can also be written as it follows:

$$K_s = \frac{q * p - q_{cr.} * p}{q * p} * 100 = \frac{q * p - q_{cr.} * p}{q * p} * 100 = \frac{q - q_{cr.}}{q} * 100 \qquad (16)$$

The safety coefficient is used to appreciate the entity from the point of view of evaluating the exploiting risk, as it follows (Mihai, 1999):

– insecurity, if $K_s < 10\%$;
– relatively stable, if $10\% < K_s < 20\%$;
– comfortable, if $K_s > 20\%$.

The safety index

Some authors (Rusu et al, 1995) present the safety margin under relative form by safety index. The safety index is the expression in percentage of the surplus towards the breakeven and it is determined as it follows:

$$I_s = \frac{CA}{CA_{cr.}} * 100 \tag{17}$$

It is considered that a good financial situation is represented by the entities that have (Rusu and others, 1995). By replacing in the relation of the safety margin we obtain:

$$K_s = 100 - \frac{1}{I_s} \tag{18}$$

So, we can say that Rusu and others (1995) consider that the entity has a good financial situation if: .

We use the appreciation of the entity made by Mihai (1999) and we extend it for the safety index and we obtain:

– insecurity, if $I_s < 111{,}11\%$;
– relatively stable, if $111{,}11\% < I_s < 125\%$;
– comfortable, if $I_s > 125\%$.

B. The deviation of the safety coefficient

We use the same model to determine the influence of the factors analyzed in the deviation of the safety coefficient and we have:

$$\Delta_{K_s} = K_{s_1} - K_{s_0} = \left(\frac{q_1 - q_{cr.-1}}{q_1} - \frac{q_0 - q_{cr.-0}}{q_0}\right) * 100 = \left(\frac{q_{cr.-0}}{q_0} - \frac{q_{cr.-1}}{q_1}\right) * 100 = \\ = \left[\frac{CF_0}{[q_0 * (p]_0 - c_{v0})} - \frac{CF_1}{[q_1 * (p]_1 - c_{v1})}\right] * 100 \tag{19}$$

We re-write the relation and we have:

(20)

We re-arrange the terms and the relation becomes:

$$\Delta_{\downarrow}(K_{\downarrow}s) = [[(CF)]_{\downarrow} 0/(q_{\downarrow} 0 * (p)]_{\downarrow} 0 - [(v_{\downarrow} v)]_{\downarrow} 0)) - [(CF)]_{\downarrow} 0/([(q_{\downarrow} 0 * (p)]_{\downarrow} 1 - \\ - [(c_{\downarrow} v)]_{\downarrow} 0)) + [(CF)]_{\downarrow} 0/(q_{\downarrow} 0 - [(c_{\downarrow} v)]_{\downarrow} 0)) - [(CF)]_{\downarrow} 0/[(q_{\downarrow} 0 * (p)]_{\downarrow} 1 - \\ - [(c_{\downarrow} v)]_{\downarrow} 1)) + [(CF)]_{\downarrow} 0/[(q_{\downarrow} 0 * (p)_{\downarrow} 1 - [(c_{\downarrow} v)] \tag{21}$$

The deviation of the safety coefficient is due to:

– change of prices:

$$\Delta_{p_{Ks}} = \left[\frac{CF_0}{q_0 \cdot (\bar{p}_0 - c_{v0})} - \frac{CF_0}{q_0 \cdot (\bar{p}_1 - c_{v0})}\right] \cdot 100 \quad (\%) \qquad (22)$$

– change of the variable cost per unit:

$$\Delta_{c_{v_{Ks}}} = \left[\frac{CF_0}{q_0 \cdot (\bar{p}_1 - c_{v0})} - \frac{CF_0}{q_0 \cdot (\bar{p}_1 - c_{v1})}\right] \cdot 100 \quad (\%) \qquad (23)$$

– change of the fixed costs:

$$\Delta_{CF_{Ks}} = \left[\frac{CF_0}{q_0 \cdot (\bar{p}_1 - c_{v1})} - \frac{CF_1}{q_0 \cdot (\bar{p}_1 - c_{v1})}\right] \cdot 100 \quad (\%) \qquad (24)$$

– change of the volume of the activity:

$$\Delta_{q_{Ks}} = \left[\frac{CF_1}{q_0 \cdot (\bar{p}_1 - c_{v1})} - \frac{CF_1}{q_1 \cdot (\bar{p}_1 - c_{v1})}\right] \cdot 100 \quad (\%) \qquad (25)$$

The deviation of the safety margin and of the safety coefficient from a period to another can be interpreted as it follows:

- the change with + → **favorable** change;
- the change with – → **unfavorable** change.

The operational leverage

The operational leverage represents the extent to which the fixed costs are used by the entity. The managers use the operational leverage to explain how the profit can grow in percentage terms with just a little sells growth (Cristea, 2003).

The operational leverage is determined as it follows:

$$P_O = \frac{C_c}{P} = \frac{CA - c_{v_T}}{P} \qquad (26)$$

where:

C_c – coverage contribution;

P – profit;

c_{v_T} – total variable costs.

A large proportion between the fix costs and variable costs determine a high operational leverage, which means that the profit will be very sensitive to sells change, so a little percentage of the growth or the decrease of sales will result in a large percentage of growth or decline in profit. A small proportion between the fix costs and the variable costs determine an low operational leverage, which means that the influence of sales change over the profit will be alleviated. Thus, the operational leverage decreases as the sells and profit increase.

Case study

To exemplify what we have presented and to easily understand the utility of the breakeven in analyzing an entity, we present in table 1 the data of an entity with a production activity, and starting from initial state (0), we will present several possible scenarios (1, 2, 3) depending on which it can be chosen the scenario that leads to the achieving the proposed objective.

The entity will be considered after all the criteria listed.

Table 1. The budget of earnings and expenses

Indicators	Initial (0)	Version 1	Version 2	Version 3
The unit selling price (lei/piece)	82	88	80	84
The unit variable cost (lei/piece)	58	57	55	59
The total fix costs (lei)	323.000	355.000	323.000	320.000
The productive and sold quantity (pieces)	24.150	26.200	27.100	22.800
The maximum productive capacity (pieces)	29.000	29.000	29.000	29.000

The analysis of the sensitivity of the profit and of the influence of the analyzed factors over it is presented in table 2 and table 3.

Table 2. The situation of the main indicators

Indicators	Initial (0)	Version 1	Version 2	Version 3
The unit selling price (lei/piece)	82	88	80	84
The unit variable cost (lei/piece)	58	57	55	59
The total fix costs (lei)	323.000	455.000	323.000	320.000
The productive and sold quantity (pieces)	24.150	26.200	27.100	22.800
The max. productive capacity (pieces)	29.000	29.000	29.000	29.000
Turnover (lei)	1.980.300	2.305.600	2.168.000	1.915.200
Variable expences (lei)	1.400.700	1.493.400	1.490.500	1.345.200
Coverage contribution (lei)	579.600	812.200	677.500	570.000
Profit (lei)	**256.600**	**357.200**	**354.500**	**250.000**
Breakeven (pieces)	13.458,33	14.677,42	12.920	12.800
The turnover critical (lei)	1.103.583,33	1.291.612,90	1.033.600	1.075.200
The safety margin value (lei)	**876.716,67**	**1.013.987,10**	**1.134.400**	**840.000**
The safety margin physical (pieces)	**10.691,67**	**11.522,58**	**14.180**	**10.000**
The safety coefficient (%)	**44,27**	**43,98**	**52,32**	**43,86**
Safety index (%)	179,44	178,51	209,75	178,13
Operational leverage	**2,26**	**2,27**	**1,91**	**2,28**

Comparing the three scenarios the manager would be tempted to choose the scenario with the highest estimated profit (version1). Taking a better look at the indicators from the table we can see that version 1 presents a higher risk than version 2 because it presents higher profit sensitivity and superior safety margin and safety coefficient. Also, version 2 has a lower breakeven than version 1, so the entity reaches faster to the balance point. From this point of view, version 3 is the less suitable to take into account because it presents the lowest estimated profit and the highest operational leverage, so it presents the highest risk to eventual changes in the variables taken into account.

Studying the cost-price and sale-profit relation we can notice that version 1 presents a larger discrepancy than the others, with a sell price of 88 lei/piece (with 10 % higher than the selling price of version 2) and total fix costs of 455.000 lei (with 40,87% higher than the fix costs of version 2).

The high selling price and high fix costs of version 1 can be the consequence of advertising, promoting, marketing and sponsorship expenses which the entity makes to determine an improvement of its image and to inoculate to clients a very good opinion regarding the company product. In this way the clients will accept a higher price, convinced that the price surplus is due to the superior quality of the bought product.

Version 2 is preferable also from the point of view of safety margin (fig. 1), being known the fact that, as high the safety margin as prepared is the entity to face eventual risks that may occur, especially when an actual value of the activity differs from the expected value. This fact is reflected also over the safety coefficient which has the highest value in version 2, being the most favorable situation, so the sells of the company can decrease by 52,32 % before the entity enters the losses area.

In all three proposed versions, the safety coefficient is higher than 150% which leads to the conclusion that, regardless of the chosen version, the entity will be situated in a comfortable area from the point of view of the operational risk.

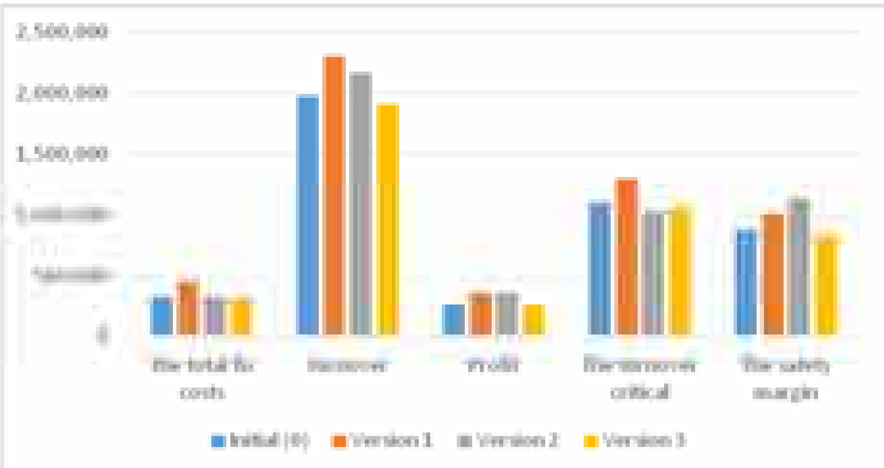

Figure 1. Comparative situation of the implementation of the proposed variants

We can say that the second version is the most favorable from the given three because:

- ✓ it has the highest safety margin, so it can better resist to some possible market fluctuations;
- ✓ it has the highest safety coefficient so it presents the lowest risk in case of possible changes of the analyzed variables;
- ✓ it implies the lowest critical turnover, meaning that the entity can faster reach the sales volume needed to cover all costs;
- ✓ it assumes the lowest selling price which can determine a higher confidence that the company's product will be competitive;
- ✓ it presents the lowest operational leverage, so the profit sensitivity to eventual changes is reduced.

The comparative situation of the researched indicators reported to version 2 as a reference basis is graphically presented in figure 2.

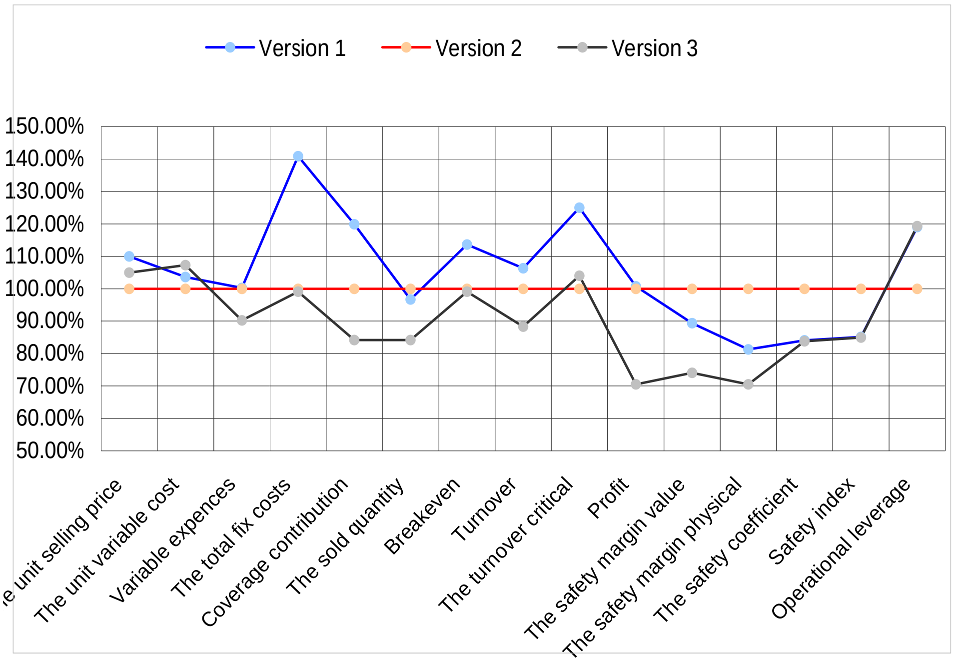

Figure 2. The indicators researched with the reference basis version 2

As we can see in figure 2, the analyzed risk indicators (safety margin, safety coefficient and operational leverage) are favorable to version 2 except for the profit which is higher in version 1 (357.200 lei compared to 354.500 lei). In percentage it results that version 1 presents a profit with 0,76% higher. If we compare this difference which is favorable for version 1 in comparison with version 2, with the unfavorable difference from the safety margin of -11,88%, it results that the profit surplus obtained by implementing version 1 does not justify taking such a risk, and version 2 offers a higher safety.

The analysis of the deviations of safety margin and coefficient in the analyzed period according to the influences of the researched factors is presented in table 3.

Table 3. The analysis of safety margin and safety coefficient deviations

	Deviation		
Indicators	Version 1	Version 2	Version 3
The deviation of the safety margin physically expressed: $\Delta_{M_{S(Q)}}$	**+830,91 pc.**	**+3.488,33 pc.**	**-691,67 pc.**
- due to the change of the prices: $\Delta_{p_{M_{S(Q)}}}$	+2.691,67 pc.	-1.223,48 pc.	+1.035,26 pc.
- due to the change of variable unit cost: $\Delta_{cv_{M_{S(Q)}}}$	+347,31 pc.	+1.761,82 pc.	-496,92 pc.
- due to the change of the fixed costs: $\Delta_{CF_{M_{S(Q)}}}$	-4.258,06 pc.	0	+120 pc.
- due to the change of the volume activity: $\Delta_{Q_{M_{S(Q)}}}$	+2.050 pc.	+2.950 pc.	-1.350 pc.
Safety margin deviation expressed in value: $\Delta_{M_{S(CA)}}$	**+137.270,43 lei**	**+257.683,33 lei**	**-36.716,67 lei**
- due to the change of the prices: $\Delta_{p_{M_{S(CA)}}}$	+301.016,67 lei	-119.262,12 lei	+108.344,87 lei
- due to the change of variable unit cost: $\Delta_{cv_{M_{S(CA)}}}$	+30.563,44 lei	+140.945,45 lei	-41.741,54 lei
- due to the change of the fixed costs: $\Delta_{CF_{M_{S(CA)}}}$	-374.709,68 lei	0	+10.080 lei
- due to the change of the volume activity: $\Delta_{Q_{M_{S(CA)}}}$	+180.400 lei	+236.000 lei	-113.400 lei
Safety coefficient deviation: Δ_{K_S}	**-0,29 %**	**+8,05 %**	**-0,41 %**
- due to the change of the prices: $\Delta_{p_{K_S}}$	+11,15 %	-5,07 %	+4,29 %
- due to the change of variable unit cost: $\Delta_{cv_{K_S}}$	+1,44 %	+7,30 %	-2,06 %
- due to the change of the fixed costs: $\Delta_{CF_{K_S}}$	-17,63 %	0	+0,50 %
- due to the change of the volume activity: $\Delta_{Q_{K_S}}$	+4,76 %	+5,82 %	-3,14 %

The role of the deviation analysis is to provide information comparable from a period to another and to establish the impact that each analyzed factor has on the calculated global deviation.
If we refer only to version 2, because as we have shown it presents most of the advantages, we can observe that the safety margin grows both in value and physically due to the growth of the activity volume of the entity and to the decrease of the unitary variable cost (example: figure 3). The decrease of the unitary selling price has a negative impact, attenuated by the higher influence of the other two analyzed factors. The same situation occurs when analyzing the deviation of the safety coefficient.

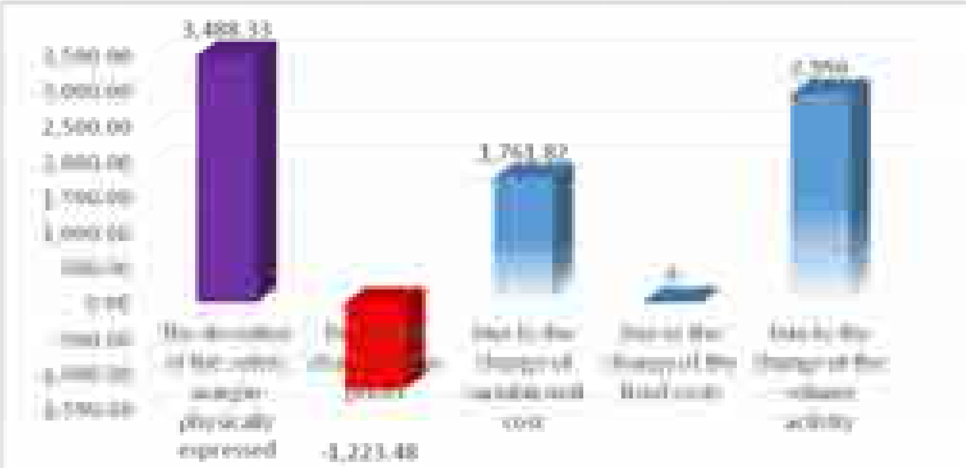

Figure 3. The deviation of the safety margin physically expressed for version 2

Concluzions

Knowing the size of the factors that can influence profit change in a certain period allows:

- planning the profit that must be reached on the basis of well specified objectives;
- prediction of the effects of the eventual changes in connection with the selling price, variable cost, fix costs or the physical volume of activity over the profit;
- determining the suitability of investment making by evaluating the impact over the entity's result;
- justifying the financial decisions as loans or credits;
- defining the dimension of the real activity which assures the best results;
- evaluating the consequences of implementing different proposed projects;

The analysis of the profit sensitivity provides more possible versions by the analysis of present plausible conditions. Of course, at a global level, the manager obtains easier information regarding the change of the result under the action of all influencing factors. More important is obtaining unilateral information that can to quantify the influence of each analyzed factor over the profit sensitivity and estimations of future evolutions.

The presented analysis model provides managers knowledge of the influence of each factor over the the evolution of profitability of the entity, allowing them to adopt the right decisions based on the importance of the influence of the analysis factors on the results obtained by the entity.

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