



BUSINESS RISK CHALLENGES TO FOOD INDUSTRY ENTREPRENEURS

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ABSTRACT

The theme „Business risk challenges to food industry entrepreneurs” is connected with the second of the main thematic areas of the Third International Scientific Conference “Business and Regional Development”, set up by the Faculty of Economics, Trakia University, Bulgaria.

The purpose of the report is to focus on some of the challenges associated with business risk to food industry entrepreneurs.

The authors point out measures to reduce business risk based on data obtained by some modern methods for the analysis of business risk in the food industry entrepreneurship.

Key words: measures to reduce business risk, Break-even point analysis, sales revenue

The risk is a category that is closely related to entrepreneurship. Very often entrepreneurial income is defined as “an excessive profit, received in an innovative production process and implemented innovative methods of risk”(1) using “new techniques and technologies, new forms of organization of labor and production, new products and markets, new marketing strategies, etc.”(2).

Risk should not necessarily be associated with danger, where the entrepreneur loses solid amount of its capital. It could be seen as a prerequisite for a favorable outcome of the situation, resulting in the formation of certain profit.

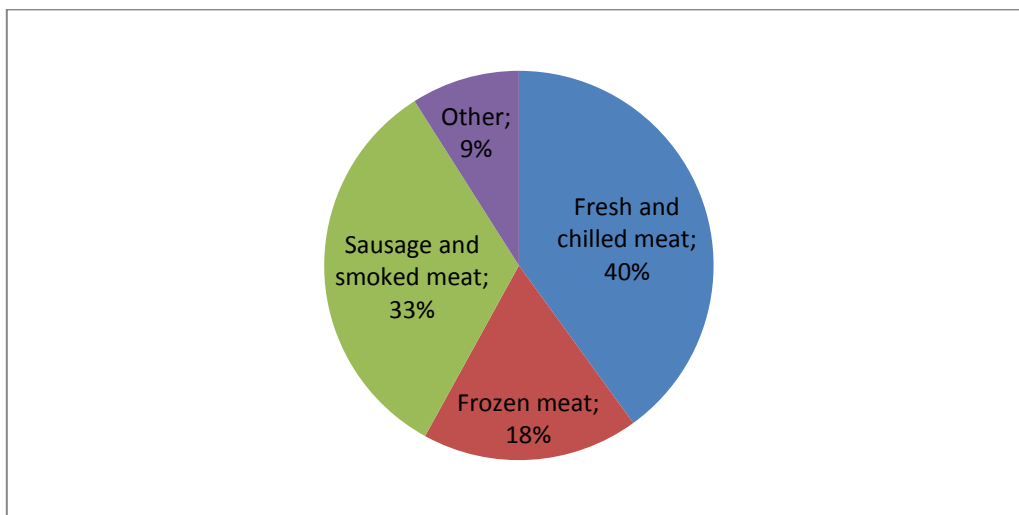
In management risk is defined as „deviation from the possible outcomes occurring in a given situation“(3) The reasons for these variations may be due to various factors such as sales volume, unit price, cost of raw materials, cost of

work, existing competition, economic conditions, legislation, state and organization of industry, etc.. The main task of the entrepreneur is to assess the degree of risk and its management, rather than striving to avoid.

In economic theory, there are different classifications of risk according to various criteria. This study refers to “business risk” which is defined as the possibility of adverse changes in market and economic conditions in which the entity operates”. (4) These changes affect the fundamentals of the company as sales volume, revenues, expenditures, financial results, profitability, etc..

The subject of this study is the business risk associated with entrepreneurship in the “Food Industry”. Object of study are companies from the sector “Butchers” in Stara Zagora region. The study included 6 /six/ companies whose sales formed 91% of total sales of meat and meat products in the region /**Fig. 1** shows the assortment structure of sales of firms participating in the survey/.

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Source: Trade Register

Fig. 1. Assortment structure of the volume of production and sales in the “Butchers” in Stara Zagora region

Two methods are used to assess the of business risk of entrepreneurs from the surveyed companies – „Break-even point analysis“ and „Percentage of variation“. (5)

„**Break-even point analysis**“ (*BEPA*) is widely used in the financial analysis. Its application involves the performance of calculations to find the following indicators:

- 1/ *Break-even point in units* ($q_{b/e}$) – this indicator determines the level of sales below which the company would generate losses;
- 2/ *Break Even-point in sales revenue* ($Q_{b/e}$) – this indicator provides information on the volume of sales in value to the amount of which the entrepreneur operates at a profit;
- 3/ *Margin of Safety* (Z) – calculated as a deduction between the actual level of sales (Q_r) and the critical size of sales ($Q_{b/e}$). It presents the provisions for reduction of sales revenue within the enterprise will not suffer a loss;
- 4/ *Margin of Safety in percentage* ($Z\%$) – presents the reduction in the amount in sales or revenues from sales to the level of which the entrepreneur makes profit;
- 5/ *Coverage ratio of critical revenue* (K_c) – indicates the degree of coverage of critical revenue by actual;
- 6/ *Operating Leverage* (OL) – indicates the sensitivity of profits to changes in sales volume. There are various methods for

determining it, but the purpose of our study it calculates by dividing 100% of *Margin of Safety in percentage* ($Z\%$).

The analysis of the business risk by presented algorithm would be more precise if we have the complete accounting information for each individual company. A very important point in this method is the correct determination of the fixed (FC) and variable costs (VC). They are the reference point in determining the *Break-even point in units* ($q_{b/e}$). Due to the confidential nature of some information, for the purposes of the present study the following approach was administered by making these preliminary clarifications:

1. The analysis is embodied in the main product groups of assortment structure of the companies participating in the study (*See Fig.1*).
2. The price does not include VAT;
3. “Analysis of the accounts of expenditure” is used in determining the fixed (FC) and variable costs (VC).
4. The group “Variable costs (VC)” includes: material costs, wages and social charges. All other costs are allocated to the group of “Fixed costs (FC)”.

The results of calculations are presented in (**Table 1, Table 2 and Table 3**).

Table 1

Fresh and chilled meat - 40%

№	Indicators	2006 r.	2007 r.	2008 r.	2009 r.	2010 r.
1	Sales volume /tons/ - (q)	7215	7322	10095	10943	12012
2	Sales price /leva/t/ - (p)	4500	4600	4730	4570	4190
3	Fixed costs /в лв./ - (a)	4231000	4501000	5739000	4837000	5150000
4	Variable costs /in leva/	27502000	28327000	34784000	42334000	42276000
5	Av. variable costs per unit /in leva/ - (b)	3812	3869	3446	3869	3519
6	Profit/loss /in leva/ - $\Pi=q.p.(a+q.b)$	732920	851382	7222980	2834043	2910052
7	Break-even point in units - $q_{be} = a/p.b$	6150	6157	4470	6900	7675
8	Break-even point in sales revenue - $Q_{be} = q_{be}.p$	27673692	28323666	21141332	31533652	32158718
9	Sales revenue /in leva/ - (Qr)	32467500	33681200	47749350	50009510	50330280
10	Margin of Safety - $Z=Qr.Q_{be}$	4793808	5357534	26608018	18475858	18171562
11	Margin of Safety in percentage of sales revenue - $Z\%=Qr.Q_{be}/Qr . 100$	15	16	56	37	36
12	Margin of Safety in percentage of sales volume - $Z\%=q.q_{be}/q . 100$	15	16	56	37	36
13	Coverage ratio of critical revenue - $Kc=Qr/Q_{be}$	1	1	2	2	2
14	Operating leverage	6,7	6,25	1,8	2,7	2,8

Table 2

Frozen meat - 18%

№	Indicators	2006 r.	2007 r.	2008 r.	2009 r.	2010 r.
1	Sales volume /tons/ - (q)	3949	3988	5440	6861	6781
2	Sales price /leva/t/ - (p)	3700	3800	3950	3280	3340
3	Fixed costs /в лв./ - (a)	1904040	2025360	2582460	2176560	2317500
4	Variable costs /in leva/	12375900	12747060	15652980	19050120	19024200
5	Av. variable costs per unit /in leva/ - (b)	3134	3196	2877	2777	2806
6	Profit/loss /in leva/ - $\Pi=q.p.(a+q.b)$	331094	383392	3254660	1274523	1303554
7	Break-even point in units - $q_{be} = a/p.b$	3364	3353	2407	4327	4340
8	Break-even point in sales revenue - $Q_{be} = q_{be}.p$	12446905	12742331	9506726	14193075	14495225
9	Sales revenue /in leva/ - (Qr)	14611300	15154400	21488000	22504080	22648540
10	Margin of Safety - $Z=Qr.Q_{be}$	2164395	2412069	11981274	8311005	8153315
11	Margin of Safety in percentage of sales revenue - $Z\%=Qr.Q_{be}/Qr . 100$	15	16	56	37	36
12	Margin of Safety in percentage of sales volume - $Z\%=q.q_{be}/q . 100$	15	16	56	37	36
13	Coverage ratio of critical revenue - $Kc=Qr/Q_{be}$	1	1	2	2	2
14	Operating leverage	6,7	6,25	1,8	2,7	2,8

Table 3

Sausage and smoked meat - 33%

№	Indicators	2006 r.	2007 r.	2008 r.	2009 r.	2010 r.
1	Sales volume /tons/ - (q)	5699	5789	7991	8090	8615
2	Sales price /leva/t/ - (p)	4700	4800	4930	5100	4820
3	Fixed costs /в лв./ - (a)	3490740	3713160	4734510	3990360	4248750
4	Variable costs /in leva/	22689150	23369610	28697130	34925220	34877700
5	Av. variable costs per unit /in leva/ - (b)	3981	4037	3591	4317	4048
6	Profit/loss /in leva/ - $\Pi=q.p.(a+q.b)$	606841,00	703847,00	5965439	2344110	2402030
7	Break-even point in units - $q_{be} = a/p.b$	4855	4867	3536	5096	5504
8	Break-even point in sales revenue - $Q_{be} = q_{be}.p$	22818467,32	23359328,96	17431765,72	25990850,57	26527169,69
9	Sales revenue /in leva/ - (Qr)	26785300	27787200	39395630	41259000	41524300
10	Margin of Safety - $Z=Qr.Q_{be}$	3966832,68	4427871,04	21963864,28	15268149,43	14997130,31
11	Margin of Safety in percentage of sales revenue - $Z\%=Qr.Q_{be}/Qr . 100$	15	16	56	37	36
12	Margin of Safety in percentage of sales volume - $Z\%=q.q_{be}/q . 100$	15	16	56	37	36
13	Coverage ratio of critical revenue - $Kc=Qr/Q_{be}$	1	1	2	2	2
14	Operating leverage	6,7	6,25	1,8	2,7	2,8

Break-even point in units ($q_{b/e}$) and Margin of Safety (Z) for 2010 are illustrated in Fig. 2, Fig. 3 and Fig. 4:

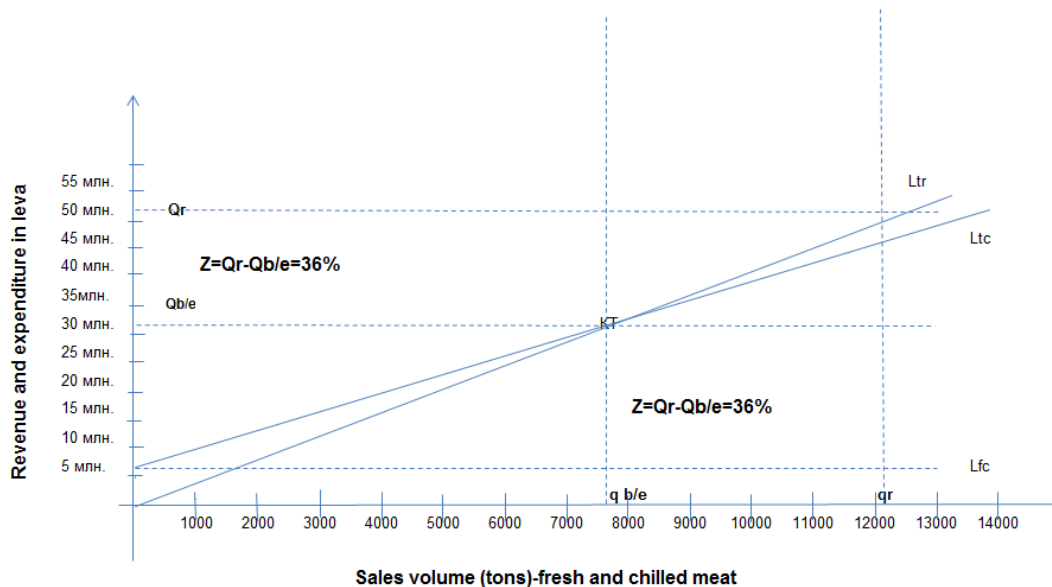


Fig. 2. Break-even point in units and Margin of Safety – Fresh and Chilled Meat

Break-even point in units ($q_{b/e}$) “Fresh and chilled meat” for 2010 is 7675 tons. Compared to the previous years of the period 2006 – 2010 it is greatest. This trend continued at the indicator Break Even-point in sales revenue ($Q_{b/e}$) – its size in 2010 is 32 million leva. Most favorable for business during the period 2006 – 2010 is 2008: level of profit is highest – over 7 million leva and the rate of Margin of Safety is 56%. For 2010 this level is 36%, i.e. it is possible a drop in the level of sales and level of sales revenue to 36%. Of course it is necessary these indicators to be analyzed separately in details for each entrepreneur. The fixed cost line (L_{fc}) indicates the level of fixed costs – in 2010 they are 5,2 million leva. The total cost line (L_{tc}) indicates the level of total costs. The total revenue line (L_{tr}) – the level of revenue (50 million leva for 2010). The coverage ratio for 2010 is 2, i.e the actual revenue covers twice the

size of the critical revenue, i.e. the level of business risk for this group of products is low.

Figure 3 illustrates the Break-even point in units ($q_{b/e}$) and Margin of Safety (Z) of “Frozen meat”. For this group in 2010 the Margin of Safety (Z) is 36% also, and the Coverage ratio is 2, i.e. its level of business risk is not high. There is also a tendency of the highest Margin of Safety (Z) in 2008 – 56%. The highest level of profit, however, was recorded in 2010 - 1,3 million leva. The Break-even point in units ($q_{b/e}$) in 2010 is 4340 tons and the Break Even-point in sales revenue ($Q_{b/e}$) – 14,4 million leva. The actual total sales amounted 6781 tons or 22,6 million leva.

Break-even point in units ($q_{b/e}$) and Margin of Safety (Z) for the last group of products „Sausage and smoked meat“ is presented in Fig. 4.

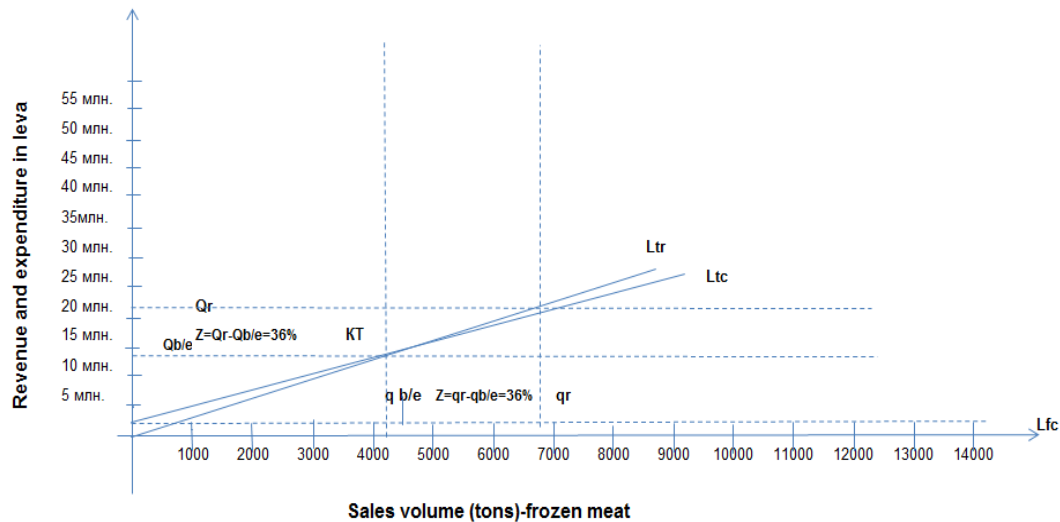


Fig. 3. Break-even point in units and Margin of Safety – Frozen Meat

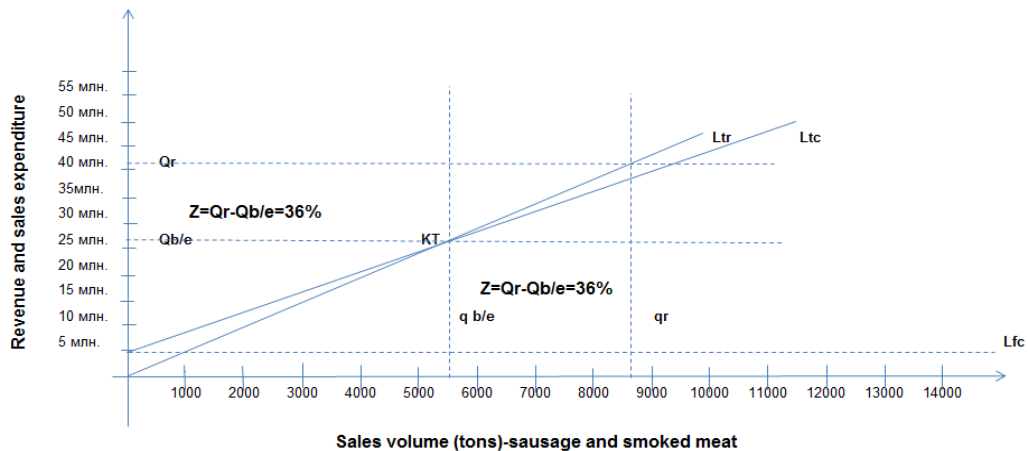


Fig. 4. Break-even point in units and Margin of Safety – Sausage and Smoked Meat

In 2010 the level of *Break-even point in units* ($q_{b/e}$) and *Break Even-point in sales revenue* ($Q_{b/e}$) are the highest – respectively 5504 tons and 26,5 million leva. The actually implementation quantity production for the same period is 8615 tons, equivalent value of 41,5 million leva. The Margin of Safety in this group is also 36%, and the Coverage ratio – 2.

At all the three product groups *Operating Leverage* (OL) is 2,8 in 2010. The value of this parameter dynamics examined in the period 2006 – 2010 ranged from 6,7 in 2005г. to 1,8 in 2008. Lower levels of *Operating Leverage* (OL)

associated with lower levels of business risk as minor changes in sales volume do not affect significantly the financial result.

For a more accurate assessment of business risk is well the method „Break-even point analysis“ to be combined with the method „Percentage of variation“. For this purpose it is necessary to compare *Margin of Safety in percentage* (Z%) with *Percentage of variation of sales volume* (V%). *Percentage of variation* (V%) indicates the deviation of sales from their average size in a given period of time (i.e. 5 years period). The deviation can be both – positive and negative. If

the *Percentage of variation* (V%) is high then the business risk is high also, as it means more uncertainty in the volume of sales. Provided that $V\%/2 > Z\%$, then there is a danger during the next period the rate of loss of sales to be greater than the percentage of *Margin of Safety* (Z%), which is signal for high business risk.

Based on the information on the volume of sales of the analyzed companies from the sector “Butchers” for the period 2006 – 2010 and calculations of the percentage of variation of the three groups we get the following results (See Table 4):

Table 4. Comparative analysis of *Percentage of variation* (V%) and *Margin of Safety in percentage* (Z%)

Product groups	Percentage of variation V%	Margin of Safety in percentage - Z%
Fresh and Chilled Meat	20%	36%
Frozen Meat	34%	36%
Sausage and Smoked Meat	17%	36%

The *Percentage of variation* (V%) is the highest at the group of “Frozen meat”, i.e. business risk here is the highest. Fluctuations in sales of “Sausage and smoked meat” are the smallest, indicating the lowest business risk at that group. During the next period in all the three groups there is no risk of a decline in sales below the *Margin of Safety*.

Using these two methods people can draw the following conclusions about the level of business risk for entrepreneurs of the sector “Butchers” from Stara Zagora region during the period 2006 – 2010:

1/ *Sales volume* (tons) and *sales revenue* (leva) exceed to a large degree *Break-even point in units* ($q_{b/e}$) and *Break Even-point in sales revenue* ($Q_{b/e}$);

2/ *Margin of Safety in percentage* (Z%) during the analyzing period is fluctuating and for the last two years (2009 and 2010) is 36%. Is this acceptable level indicating significant reserves for drop in sales without the risk of potential loss? This can be confirmed in certainty if we compare *Percentage of variation* (V%) with *Margin of Safety in percentage* (Z%). The percentage will be different in various industries. The entrepreneur could assess the acceptable values of this indicator. Therefore he must justify his judgment, relying on various indicators and methods;

3/ *Coverage ratio of critical revenue* (K_c) for the last three years – 2008, 2009, 2010r. is 2, to

values of 1 in 2006 and 2007. This indicates that the level of business risk decreases as the actual revenue covers twice the critical sales revenues.

4/ Despite fluctuations in *Operating Leverage* (OL) its values in 2009 and 2010 decreased significantly compared to 2006 and 2007. The lower levels of this indicator are evidence of reducing business risk;

5/ *Percentage of variation* (V%) has much lower values than the *Margin of Safety in percentage* (Z%), which is another confirmation of low business risk during the period 2006 - 2010;

6/ This analysis is based on some subjective assumptions that lead to distorted results. This applies especially to the determination of variable and fixed costs. For example, the group “Frozen meat” the percentage of cost of electricity probably is quite high and it should be considered as a variable cost. At the same time we do not know for sure the ratio of staff in the firms. What part of this staff is busy with activities that are constant and do not depend on changes in the volume of production? Firm-level results would be much more accurate, especially if the analyst has access to the complete information on the types of costs and their distribution by types of products.

Knowledge and use of different methods for the analysis of business risk is a prerequisite for proper management for entrepreneurs. Their use would lead to the capture of warnings about a

possible risk and taking appropriate action to prevent it.

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