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FINANCIAL INSTABILITY OF ENTERPRISE AS THE MAIN OBSTACLE HAMPERING DEVELOPMENT IN TURBULENT ENVIRONMENT

Abstract

This research is related to simulating the leading indicator of financial instability of an enterprise – with a view of issuing an early warning as to about possible forthcoming changes in the enterprise's activities. This index has been acknowledged as the leading one with respect to the enterprise, since is it can reflect the future financial capacity, based on the initial data already available. The financial stability concept implies diagnostics of an enterprise's activities on a long-term horizon. The first group of financial stability indices operates with discreet findings; the second group of financial stability indices is capable of reflecting continuous random variables. The diagnostics process consists of two stages – the analysis of the past activity of enterprise and the simulation of its future activities. At the second stage, experts encounter the fundamental problem of forecast inaccuracy and unpredictability of results for years ahead. The goal of this research is to supplement the enterprise financial stability concept and to simplify the tasks of simulating the future activity - by working out and using the leading indicator. The object of research is the activity of three conspicuous Latvian enterprises operating in three well-known sectors of economy. The subject of research is financial stability of enterprise, characterized by harmonic functioning of the activity and the process. The main problem to be solved to attain the goal is the validation of the future financial instability index as a leading indicator and the proof of its efficiency. In process of research, monographic method, comparative analysis method, and method of induction as well as some other mathematical and econometric approaches were used. The results obtained are of practical nature, since they allow one to simplify the procedure of enterprise finance stabilization under a turbulent environment by using the possibility of obtaining important information describing future shocks.

Keywords

Activity, Financial stability, Leading indicator, Process

1. Introduction

The concept of financial stability implies diagnosis of enterprise activity in the long term. The basis of the concept is division of analysis tools into two groups. The first group of financial sustainability indices operates with discrete results, while the second group consisting of financial stability factors is capable of reflecting continuous quantities.

The diagnostics process consists of two stages: analysis of the past and simulation of the future activities of the company. At the second stage, experts normally face a fundamental problem of inaccuracy and unpredictability of forecasting results for many years to come. This problem can be solved by simulating alternative scenarios that could change depending on future changes in the internal and the external environment of the company. The need to

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adjust the scenarios should be determined by the value of an integrated indicator, which can alert the managerial staff of the company in advance as to potential threats of upsetting stability condition.

The purpose of this study is to complement the concept of financial stability of a company and to simplify the tasks of simulating the future activities through the development and use of the leading indicator.

The target of research is the activity of some well-known Latvian enterprises operating in three different sectors of economy. The scope of research is financial stability of the company characterized by the harmonious functioning of the activity and the process. To hit the target, the main thing is to test the future financial instability index as the leading indicator and to prove its efficiency. This task is solved by using official data received from some well-known enterprises. The research period has lasted 10 years – from 2001 to 2010.

In the course of research, the following techniques were used: monographic method, method of comparative analysis, method of induction and other mathematical and econometric techniques.

The findings are useful since they allow one to simplify the process of stabilizing the company finance in turbulent environment through the possibility of the timely receipt of important information concerning future perturbations.

2. Turbulent environment and its influence on enterprise finance

The modern stage of development of economy is associated with a lot of factors. After the global economic recession swept the world in 2008, a certain solution was continuously sought for under the grave situation that had occurred. All of the approaches and methodologies suggested within the last five years are subdivided into two groups – political and economical ones.

Advocates of the approach of the first group consider necessary some continuous changes of external environment to bring about economic and social alignment, i.e., convergence. This approach seeks to find an optimal balance of all elements of the system by virtue of the State's efforts to ensure prosperity in the long run. However, it happens frequently that such declared goals are not achieved. This may be due to the system elements' inability to maintain balance for a long period of time. Even as a result of manipulations with external environment, a short-term balance only is achieved; continuous changes of all factors of the system take place in the course of economic development, which leads to the necessity of reviewing "the optimal vector". As a result of permanent correction of those factors under a continuously changing turbulent environment, experts eventually cease to understand each other. The essence of this problematic situation is external environment's inability to control the system. Therefore, the existence of this approach is impossible if isolated from the concepts of the second approach.

The second approach focuses on analysis of the system from the inside - through study of the principles of functioning of the system structures and the interaction between its elements, thus giving one an opportunity to receive information on economic potential and the extent of its use.

The economic potential is formed through the interaction of such subjects of economic system as enterprises, lending institutions, insurance and financial companies and households. In this article, the first subject of the system – an enterprise - is regarded as the key subject. This choice is accounted for by the degree of freedom of using the financial potential of the subject in question. Since the activity of lending institutions, financial and insurance companies is strictly regulated by State and international legal and legislative acts, the company was offered a greater flexibility of its finances. As regards households, they can not enjoy such a high freedom since they possess a far inferior financial potential.

Thus, the internal element of economic system operating under turbulent environment, which possesses the highest manoeuvrability, is a company. Therefore, optimization of activity of this particular subject is capable of raising the economic potential of the State.

According to the theory of financial stability developed by V. Kovalev (2002), I. Blank (2004, 2005), R. Kaplan and R. Norton (2007), L. Gilyarovskaya (2006) and E. Altman (1993, 2002) the current potential of a company is determined through calculation of its financial potential. This is accomplished by the current activity financial ratios determination method based on using the company's financial data reporting. However, such an analysis reflecting discrete past performance is inadequate for the development of the enterprise under a turbulent environment.

For the company development in the long term, the author examines the concept of financial stability as harmonious interaction of activities and processes within a specific system's framework. A set of methods of this approach allows the enterprise to successfully build and use its financial capacity for a long period of time, through the transition from financial sustainability to financial stability.

3. Financial potential of enterprise from the perspective of time

In order to obtain objective knowledge about the company's activities, the managerial staff use various data generated by various divisions and departments of the company. As a rule, in order to determine a current state of performance, all the tasks are reduced to evaluation and comparison of the past and the current potential of activities. Practice shows that experts' opinions differ because different methodologies involve an analysis of various, and often multifaceted components of financial capacity. When a calculus tool is focusing on efficiency, while another one – on productivity and the third one is focusing on variability, no homogeneous result can be obtained. As regards interpretation of such a distorted result, conclusions and recommendations are distorted even to a greater extent, as a rule. Ultimately, the company management not only fails to receive necessary information in support of decision making, but is being mislead since there is no more way to check exactly which specific component of financial potential was analyzed by expert.

Within the framework of the research performed by the author, a financial model of enterprise should be presented as a system of interaction of activities and processes. The model in question enables one to make parallel investigations of the activities run by the company under the influence of many different processes. At this point, one can identify the stability of the activity itself, not excluding the essence of the impact rendered by processes. If the activity is stable, there is no point of subjecting it to the impact from processes. But, if the activity is unstable, it is necessary to identify the extent of the impact rendered by processes, which would enable one to find and determine compensatory mechanisms capable of stabilizing the activity (Olve, Roy and Wetter, 1999; Scott, 2000; Teslinov, 2011; Van Horrne and Vachowicz, Jr., 2001).

Stabilization of activity is reflected in the financial potential of enterprise over time. Therefore, a model is required that could trace the financial potential of enterprise in the long run. Such a model cannot be developed on a one-sided concept of financial position or financial sustainability; as a must, the model should include the trends of changing the key parameters of activity with respect to future periods.

Thus, the financial potential of enterprise should be assessed from the perspective of time, – in the short and long term, respectively. As regards the financial stability approach the methodology of which enables one to analyze continuous performance results, the theory of financial sustainability analyzes only moment quantities of financial condition at the given moment. Consequently, the methodology of ratio analysis of financial sustainability determines discrete variables from the perspective of time, whereas the methodology of financial stability enables one to identify trends based on the analysis of continuous variables.

Financial potential from the perspective of time	Short-term prospects	Long-tern prospects	Pattern of result	Recommended approach
Assessment of past activities	Very efficient	Efficient	Continuous	Stability
Assessment of current activities	Efficient	Inefficient	Discrete	Sustainability
Assessment of future activities	Inefficient	Very efficient	Continuous	Stability

Table 1: Financial potential analysis methodology time-orientated comparison

Discreteness and continuity of findings obtained by these approaches is a core principle of the analysis where identifying and forecast of continuous data come to the fore. Discrete data in this task enables one to set some known standards for the basic criteria of stability of activities, the control of which enables one not only to state an accomplished fact but to perform a discrete valuation of a model scenario of the activity development in future, where usage of data in advance is a compulsory requirement.

4. Analysis of discrete data in assessing financial sustainability

Financial sustainability of an enterprise is a definite set of criteria the values of which lie within some definite preset ranges. From the standpoint of research performed by V. Kovalev (2002) and L. Gilyarovskaya (2006) financial sustainability of any profit-making company is its solvency, i.e., the availability of a mortgage debenture with respect to the company's assets. The investigation performed by Kaplan and R. Norton (2007) has expanded this object domain to system presentation. The authors have come to the conclusion that provided this principle is observed within the framework of the preset system, it would seem inexpedient to consider each criterion individually or to try to unite all possible sustainability criteria into a single set.

Taking into account the statement mentioned above, a single individual value of a criterion can not fully describe an activity, while any attempts to unify all of the known sustainability criteria of the enterprise into a single set lead to heterogeneity of results with respect to the samples that also often contradict to each other.

While interpreting these results reflecting a definite period of time, experts face with the problem of discreteness of extracted values. Since financial sustainability criteria are based on such a form of financial reporting as accounting balance sheet and the annexes enclosed thereto, one must reckon with the fact that the economic sense of the received result is discrete, i.e. it reflects the situation as of the current moment - the end of the financial year.

The problem solution in terms of division of the study timeframe is to present the financial potential of companies in two time prospects – short-term and long-term ones. The use of criteria in this case, from the perspective of time, is pre-conditioned by two different approaches and toolsets.

Within the framework of the author's study, financial sustainability of the company is assessed according to a respective rating developed. The main components of sustainability are liquidity and solvency. By graphically combining the two components, "sustainability quadrants" are formed, whereon the obtained values, characterizing the standard-meeting level with respect to received indices, are marked. Thus, rating A, B or C is formed with respect to each component, depending on the indicator scale received.

Financial sustainability is formed by 9 main coefficients generalized in the Table below:

No	Name	Designation	Indicator most affected	Parameters used when calculating indicator	Recommended value
1	Current assets of company's own	$Wcap$	Solvency	CL, CA (Inv, AR, C)	$Wcap > CL$
2	Current liquidity ratio	Kcl	Liquidity	Inv, AR, C, CL	≥ 2
3	Liquidity turnover ratio	Kfl	Liquidity	AR, C, CL	≥ 1
4	Absolute liquidity ratio	Kal	Liquidity	C, CL	$0,5 - 1,0$
5	Current assets coverage ratio	Kwc	Solvency	Wcap, CA, (Inv, AR, C)	$\geq 0,1$
6	Working capital share in stock cover	Ws	Solvency	Inv, Wcap, (Inv, AR, C)	$\geq 0,5$

7	Stock cover ratio	*Wjsc*	Solvency	*Wcap, JSC (Inv, AR, C, BL, CR)*	*No recommendations*
8	Current assets to equity ratio	*Me*	Solvency	*E, Wcap (Inv, AR, C)*	*No recommendations*
9	Maneuver capability of company's own circulating assets	*Mwc*	Solvency	*C, Wcap (Inv, AR, C)*	*0,0 – 1,0*

Table 2: *Financial potential discrete data analysis instruments*

where: *CL –current liabilities*;

CA – cash reserves (current assets): CA = Inv + AR + C;

Inv – stock;

AR –accounts receivable;

C- cash resources,

JSC – logically substantiated stock cover sources;

JSC = Wcap + BL + CR.

BL – bank stock loans,

CR – accounts payable for raw materials,

E – shareholders' equity.

Financial sustainability substantiated by the discreteness of essence of results, shows the state of the company under investigation in the short term. The values in question are useful for financial analysts both analyzing the past and the current activities and assessing the sustainability of future development scenarios. However, one should bear in mind the fact that these values characterize the time-related control points of future scenarios rather than tendencies which are continuous in essence.

5. Analysis of continuous data in assessing financial stability

Continuous data obtained in process of analyzing trends, are quite fit for assessing financial potential in the long run. Such data is capable of reflecting the potential-changing dynamics both with respect to a period of the last activities and when simulating the future activities. The main purpose of the analysis of continuous data within the framework of the author's study is to identify and formalize financial stability criteria.

The methodology of research of continuous data and analyzing the company's finance in the long run is revealed in the works by R. Higgins, T. Copeland, T. Coller, J. Moorin, A. Dolgoff, and I. Ivashkovskaya (Fonseka and Tian, 2011; Copeland, Koller and Murrin, 2008; Copeland and Dolgoff, 2006; Ivashkovskaya, 2012). Within the framework of a system-based presentation, from the perspective of the long run, the development of integrated indicators is coming to replace the system of financial ratios.

The enterprise growth theory proposed by R. Higgins (Fonseka and Tian, 2011) in the 80-ies of the 20th century, originally anticipated calculation of planned sales growth in a subsequent period based on current data. At present, the sustainable growth pace also requires formation of a balance between all many-sided objectives of a company. The

parameters of this equation include, for example, the planned capitalization of profits and the level of dividends, the planned level of turnover and capital coefficient of assets, the planned leverage of company-owned and borrowed funds, and some other purposes. These goals are difficult to be agreed among themselves, since, according to Pareto principle, achieving one of the goals, to a certain extent, prevents one from achieving another. Ultimately, the goals may be balanced in such a way that the result is absolutely stable and equal to zero. It is exactly in this situation that financial sustainability is achieved. But as soon as the growth rate becomes positive as a result of interaction of the parameters, this suggests possible development of activities in future by way of using the current financial potential.

If the available potential is sufficiently used, a number of changes concerning criteria supporting the increase of business value take place in the company. In the opinion of T. Copeland, T. Koller and J. Murrin (2008) who had generalized the theory of cost estimate of a company for the first time, the discounted cost index of a free cash flow is an integrated indicator of company's activities. This index includes all the business activities - from the smallest incoming payments to the largest outgoing ones; the included business activity is corrected with due consideration for depreciation deductions and changes in current assets. Therefore, within a number of years a general wave of positive and negative financial flows is formed. This value, depending on the purposes of analysis, may be given, i.e. discounted, with respect to weighted average capital cost at any given time. At this point, discreteness of the value and continuity of trends come into contact.

In the studies performed by I. Ivashkovskaya (2012), a number of cost dynamics-tracking models have been developed, that demonstrate this figure as the most objective and successful indicator of activities. Consequently, the financial stability of the enterprise implies the use of the existing financial potential in the long term in order to create value. The author considering growth rapidity indicators as predictor of possibilities, and considering value as a result of realizing them, forms "sustainability quadrants", whereon the obtained values, showing the standard-meeting level with respect to received indices, are marked. Thus, rating A, B, or C is formed with respect to each component - depending on the indicator scale received. The main indicators of growth rapidity change and creation of value are generalized in the Table as follows:

No.	Name	Designation	Indicator most affected	Parameters used when calculating indicator	Recommended value
1	Sustainable growth ratio	SGR	Growth rapidity changes	Pr, P_n, S, E, D, A	$SGR > 0$
2	Sustainable growth ratio under changing conditions	SGR_g	Growth rapidity changes	$E, div, S/A, D/E, P_n/S, b, S_0$	$SGRg > 0$
3	Future cash flow	FV_t	Cost	$P_n, Dept, A, NI, ROIC, g$	$FV_t > 0$
4	Current cash flow	PV_t	Cost	$FV_t, d, P_n, A, NI, ROIC, g$	$PV_t > 0$
5	Total present value integrated	PV	Value	$C_0, N, PV_t, FV_t, d, P_n, Dept, A, NI, ROIC, g$	$PV > 0$
6	Weighted average capital cost	$WACC$	Value	$w_S, R_c, w_D, d_D, t_s, R_f, R_m, \beta$	$WACC < g$
7	Further present value at the	PV_{term_N+1}	Value	$FV_{term\_N+1}, N,$	$ROIC > W$

	end of forecast period			FV_{N+1}, WACC, g, P_n, Dept, A, NI, ROIC, w_S, R_c, w_D, d_D, t_s, R_f, R_m, β	ACC ROIC>g
8	Enterprise value	$PV_{project}$	Value	PV, N, PV_{term_N+1}, FV_t, FV_{N+1}, WACC, g, P_n, Dept, A, NI, ROIC, w_S, R_c, w_D, d_D, t_s, R_f, R_m, β	ROIC>WACC ROIC>g
9	Further value in an indefinite term	$PV_{term/g=const}$	Value	NOPLAT, ROI_g, g, WACC, w_S, R_c, w_D, d_D, t_s, R_f, R_m, β	$PV_{term/g=const} > PV_{term\_N+1}$

Table 3: *Financial potential continious data analysis instruments*

wherein:

P_r – increase in retained profit;

P_n – net profit;

S –target sales volume;

E –ownership capital as of the beginning of the current period;

D –borrowed capital as of the beginning of the current period;

A – Company's assets;

S_0 – sales volume within the current period;

Dept – depreciation;

NI –investment rate;

T_{DO} – period of time preceding the pay-back period;

N – prediction period;

NOPLAT –net operating profit after deduction of adjusted taxes;

ROI_g – incremental profitability of new investment capital;

w_S – ownership capital share within the general capital structure;

R_c –earning power (profitability) expected by shareholders;;

w_D – gearing (borrowed capital share within the general capital structure);

d_D –lending interest rate;

t_s –profit tax rate;

R_f –risk-free rate;

R_m – expected return of the market;

β –systematic risk ratio;

ROIC –Return on Invested Capital;

g – expected growth rate for an indefinite term.

The financial stability determined by the continuity of the essence of results shows the state of the investigated company in the long term. The values in question are useful for financial experts both when analyzing the past activities, where they prove their efficiency, and in process of assessing alternative development scenarios in future.

6. Simulation of leading indicator of financial instability

In process of simulation and assessment of alternative scenarios of development under a turbulent environment, one must bear in mind that stability-creating mechanisms are efficient provided the corresponding pre-requisites exist. In this connection, the main

obstacle to the company development under a turbulent environment is financial instability of the company's financial potential.

In other words, working out a future development scenario implies formalization of those instability processes that are most likely to occur. Moreover, the possibility of occurrence of those formalized processes unbalancing the activities should be identified prior to the advent of those processes. To make an early warning of the managerial staff, the task in question shall be solved by way of simulation and proof of the leading indicator efficiency.

Within the framework of the author's study, the indicator in question is expressed as financial instability index and reflects the future unbalance between different integers of the company. In process of simulation of the indicator, the principles of advance, polarity, irreducibility, commensurability, and adequacy have been applied (Chernavsky, 2011, 2012; Kopitov, Faingloz and Chernavsky, 2012).

The index is based on current activities, is an integrated indicator of disruption of stability and growth in the future period; after some transformations, it is expressed by the following formula:

$$FFI = w_1 \frac{A_0}{S_0} + w_2 \frac{D}{A_0} + w_3 \frac{Exp}{S_0} + w_4 \frac{CL}{CA}, \tag{1}$$

wherein:
FFI (Future Financial Instability) – future financial instability index;
A_0/S_0 – current ratio of capital intensity;
D/A_0 – scheduled combined insolvency ratio;
Exp/S_0 – scheduled loss ratio;
CL/CA – scheduled coefficient of net capital intensity;
w – weight or percentage of overall index parameters.

Recommended values: *FFI < 0,8; A_0/S_0 < 1; D/A_0 < 1; Exp/S_0 < 1; CL/CA <1.*
By assessing unbalance between the objectives and the destruction extent of the current financial potential, the indicator in question can show the planned degree of financial instability for the subsequent period. The indicator saturation principle is unidirectional one; it is preset within the limits of 20% according to Pareto law as well; consequently, approximation to a preset limit means launching the most powerful destructive forces destroying financial potential. Thus, the most essential function of the indicator is to notify about an imminent possibility of the advent of the above-mentioned phenomenon. Since predicting the advent of a definite phenomenon reflects the essence of the trends typical to those phenomena, the indicator in question is a reflection of development trends characterizing the company's financial potential.
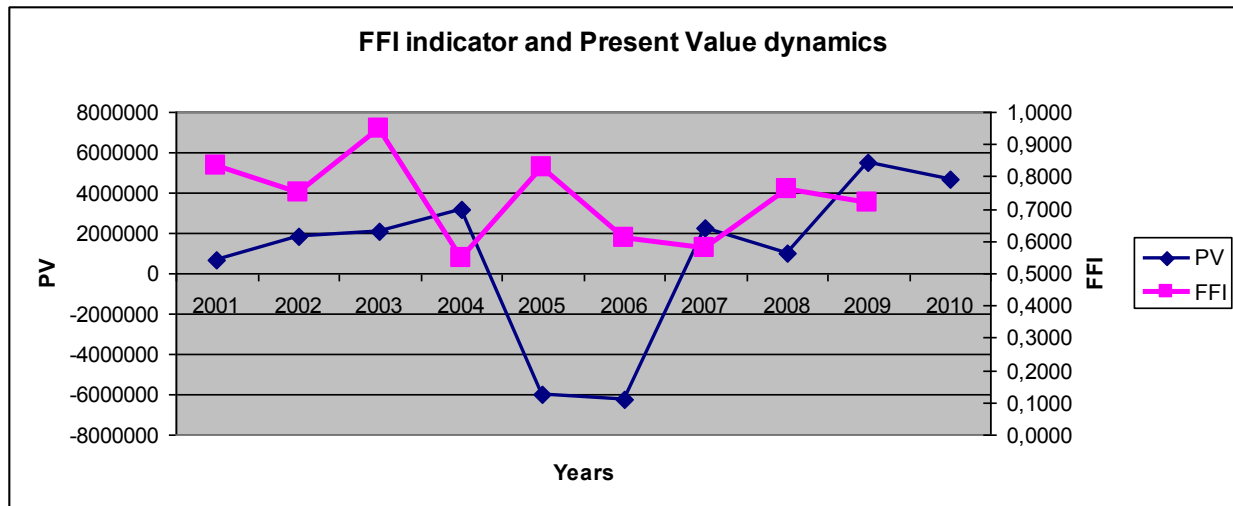
Chart 1: *FFI Indicator and present value dynamics comparison*

Since value is an integral reflection of activities, this diagram shows the dynamics of discounted value of a well-known Latvian pharmaceutical company, as well as the dynamics of the leading indicator of financial instability (http://www.lursoft.lv). Despite the obtained financial sustainability index «AA», the graph shows that the company underwent a strong decline in value during the period from 2004 to 2006; however, within the period from 2004 to 2006 the company was able to pull out its free cash flows to the former and even a higher level. In the first above-mentioned case, a leading indicator of financial instability came out in a critical area in early 2004, which attested to the forthcoming problems already at that time. In the second case, i.e. during the recession period of 2005 – 2006 when the value was negative, the indicator came out of the critical area. This fact also testified that financial stability criteria had been defined correctly, and the financial potential available to the company had been used in full already a year before the upswing.

By considering the parameters of the indicator as summarized in the Table 4, one can come to the conclusion that some erroneous steps directly causing loss in value had been taken in the past; moreover, a conclusion can be made concerning the actions that were compensatory mechanisms in the solution of this problem.

Parameters of FFI indicator	Early 2004	Early 2005	Early 2006	Early 2007
CL/CA	**1,073991076**	-0,237371014	0,654742972	0,189598617
A_0/S_0	0,84280475	**1,131708556**	**1,143288293**	**1,02325683**
D/A_0	0,784922927	0,268207797	0,455452641	0,19989205
Exp/S_0	**1,097760494**	1,021562697	1,051896073	1,022917329
FFI	**0,9499**	0,5460	**0,8263**	0,6089

Table 4: *Sensitivity analysis on FFI index parameters*

On analyzing the equation (formula 1) parameters with respect to key periods characterized by the highest variability, one can draw a conclusion on the main problem that had been solved by the company successfully. The loss of free cash flow at the company was caused by a parameter which was the most sensitive one for the company – the planned net capital intensity. The problem is connected with a mistake in working capital management and non-observation of the rule of financing of long-term investments. In early 2004, the company

has created a situation where long-term investments were financed by short-term loans, which lead to a sharp loss of free cash flow.

However, on having managed to solve that problem by early 2005, the company faced the challenge of total capital intensity, which attested to the fact that the assets acquired were too large with respect to the planned sales. Throughout the whole period of investigation, no problems with the leverage of equity and borrowed funds were observed; however, the planned sales volume was short to cover the current expenses, although the company had been working profitably.

The efficiency of the leading indicator has been tested in process of analyzing the activities of 18 well-known Latvian companies from 3 different sectors of economy; developing a multi-factor regression model implies that all the four parameters are meaningful. In the course of checking observation of the model adequacy principles, it was found that correlation between dependent and independent variables is missing; furthermore, no autocorrelation, multicollinearity, and heteroscedasticity of remnants were stated. In this connection, the model adequacy was acknowledged, and it is possible to use the model in problems of financial diagnostic of the company.

In the process of ensuring financial stability, the indicator was recognized as a leading one, as it may show future continuous efficient value-cost when using current data of financial statements.

7. Conclusion

The accomplished study complemented the concept of financial stability of the company and simplified the task of simulation the future activities through the development and use of the leading indicator of financial instability.

The use of the indicator in question enables the managerial staff of the company to receive early warnings as to about violations and unbalance in the company's activities some time in advance - prior to their occurrence. The necessity of using the indicator is motivated by a possibility of identifying some implicit threats to financial potential through the analysis of four main parameters of equation. The effect rendered by each individual parameter implies a definite degree of destruction of the financial potential stability. The findings received through the analysis of empirical material prove that the financial instability indicator is capable of detecting threats of instability even under the circumstances where the financial potential is acknowledged admissible in terms of sustainability and stability. This is primarily due to the essence of leading values. This example clearly shows that the company has violated the principle of financing long-term investments as early as in 2004, and has subsequently corrected this problem by early 2006. Accordingly, data on the value of business is showing a sharp decline in 2005 and the subsequent stabilization by the end of 2007. It should be noted that the situation in terms of stability and growth rate changes of the company was good enough during the whole period of the study.

This result is not a contradiction but rather a supplement to the concepts of financial sustainability and financial stability, as in this study using a systems approach the assessment was conducted from the perspective of two-level separation of financial potential. The assessment of financial potential was presented from the perspective of activity and processes and from the perspective of time – both in the long and the short term.

Compliance with this principle is the main recommendation to simplify the procedure of stabilization of the company's finance in a turbulent environment, through the possibility of a timely receipt of important information about future perturbations, which should be used in the simulation of financial potential in the long run.

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