

**RIGA TECHNICAL UNIVERSITY**

**Nadezhda KOLEDA**

**THEORETICAL AND PRACTICAL SOLUTIONS OF A COMPANY'S  
FINANCIAL VIABILITY AS THE BASIS FOR SUSTAINABLE  
DEVELOPMENT**

**Summary of Doctoral Dissertation**

**Riga 2011**

**RIGA TECHNICAL UNIVERSITY**  
Faculty of Engineering Economics and Management  
Institute of Production and Entrepreneurship  
Department of Economics of Production and Entrepreneurship

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FINANCIAL VIABILITY AS THE BASIS FOR SUSTAINABLE  
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Branch: Management  
Sub-branch: Business Administration

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Research supervisor  
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## DOCTORAL DISSERTATION

### PROPOSED TO THE RIGA TECHNICAL UNIVERSITY FOR THE PROMOTION TO THE SCIENTIFIC DEGREE OF DOCTOR OF ECONOMICS (*Dr.oec.*)

The Doctoral dissertation has been developed at the Department of Economics and Production and Entrepreneurship Faculty of Engineering Economics and Management of Riga Technical University (RTU). The defending of the Doctoral Dissertation will take place during an open meeting of the Promotion Council „P-09”, Faculty of Engineering Economics and Management of RTU on 4 July, 2011, Riga, 1/7 Meza Street at 10.a.m. in the room 309.

#### OFFICIAL REVIEWERS

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#### CONFIRMATION

I hereby confirm that I have worked out this Dissertation that has been submitted for review to Riga Technical University for the promotion to the degree of Doctor of Economics (*Dr. oec.*). This dissertation has not been submitted to any other university in order to receive any scientific degree.

Nadezhda Koleda .....

.....  
The Doctoral dissertation is written in Latvian, and consists of an introduction, 6 parts, conclusions and proposals, 32 tables, 22 figures, 3 annexes, and the total page count is 190. The Bibliography contains 172 sources of references.

The Doctoral dissertation and Summary are available at the Scientific Library of Riga Technical University, Kipsalas street 10.

To submit reviews please contact the Secretary of the RTU Promotion Council „P-09” professor, Dr. habil.oec. Anatolijs Magidenko; 1/7 Meza Street, Riga, LV-1007, Latvia  
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## GENERAL REVIEW

### Topicality of the Study

The situation in the world economy stipulates the necessity for a timely correct management of the level of a company's financial viability in order to provide a potential for sustainable development which became an important prerequisite for a successful business activity in the 20th century.

The financial viability of Latvian companies as a topic of scientific research is becoming more and more vital because:

- 1) *The global recession considerably influences the economy of Latvia in general;*
- 2) *Latvian companies are more often facing the problems of providing a sufficient level of financial viability, which is proved by such indicators of financial viability as leverage ratio and solvency ratio;*
- 3) *According to the bankruptcy statistics of the Republic of Latvia and European Union in general, many companies do not survive in the conditions of the modern market.*

A high level of a company's financial viability could serve as a basis for provision of sustainable development, but the uncertainty of the concept "financial viability" and heterogeneity of the elements connected to it increase a complexity of the quantitative and qualitative assessment of the level of financial viability. Achieving and maintaining an adequate level of financial viability requires a complex approach to elaboration of relevant measures of the company's economic policy.

### Goal and tasks of the dissertation

The **goal** of the Doctoral dissertation work – to study the financial viability within the sustainable development context and basing on the principles of a harmonious distribution of the structure elements of sustainability, to elaborate the economic tools for managing financial viability in order to provide companies' sustainable development.

Achievement of the goal of the Doctoral dissertation work is stipulated by the fulfilling of the following **tasks**:

- 1) To specify the essence of the concept of financial viability within the context of a company's sustainable development;
- 2) To analyze the approaches to the assessment of the level of financial viability as well as the possibilities for its application within the context of a company's sustainable development;
- 3) To create a structural model of the elements of a company's sustainable development in accordance with the level of their significance for the assessment of the contribution of a company's financial viability to the provision of sustainable development;
- 4) To elaborate the mechanism for managing a company's financial viability;
- 5) To develop the principles of managing financial viability for the companies involved in the service industry in Latvia.

### The Object, Subject and limitations of the Research

The **object** of the Doctoral dissertation research work – financial viability of the companies of a non-finance sector of economy of Latvia.

The **subject** of the Doctoral dissertation research work – the mechanism for managing financial viability as a basis for providing a company's sustainable development.

The **limitations** of the Doctoral dissertation research work: The methods used practically in the work are applied in the process of analysis by the specialists compiling financial accounts on the basis of the information available from annual reports; for classifying small and medium-sized businesses in the service industry the criteria established in the EU have been applied; the research is limited by the data available from the Central Department for Statistics of the Republic of Latvia, and the choice of the service industry for investigating the levels of the companies' financial viability limits the number of the respondents. The period of 2003 – 2008 was selected as historical data diapason for approaches, methods and models testing; however, some issues have been examined in a shorter or longer period.

Theses for the defense:

- 1) The sustainable development of a company should be based on harmony principles, which exert in the process of structuring the elements for provision of sustainability, when each element is assigned by particular significance, to uphold the system of provision of sustainable development in the state of equilibrium.
- 2) Managing financial viability is impossible without the system of those factors that influence its level, determining and estimating a marginal value of every factor of indication.
- 3) Determining the level of elasticity of the indicators financial viability according to the factors that influence, allows to timely increase and provide the level of financial viability.

The **Doctoral dissertation** is based on theoretical and practical findings of foreign authors (*W. Biver, M. Blume, E. Helfert, E. Trond, A. Tibar, L. Taylor, S. Convey, R. Taffler, R. Steurer, C. Lusthaus, L. Edwinsson, J. Argenti, E. Altman, J. Negashev, M. Abryutina, A. Grachov, A. Sheremet, R. Saifulin, R. Dronov, G. Savicka and others*) and Latvian authors (*I. Yansone, R. Shneidere, L. Bednarskis, V. Paupa, J. Vaikulis, N. Lace, E. Brighems and others*) in the field of financial viability of a company and evaluation of it.

Scientific works published in the specialized editions and Internet, legislative acts of the Republic of Latvia, data base of the Central Department for Statistics of the Republic of Latvia, provided on a special request the data from the Central Department for Statistics of the Republic of Latvia on the financial records of small and medium-sized businesses in the Riga region, the Lursoft data base on insolvency in the Republic of Latvia, publicly available information about the results of companies' business activities, as well as the knowledge, experience and results of individual research gained in the process of writing the Doctoral dissertation research work have been used in the work.

To achieve the goal of the dissertation, the following **research methods** were used: grouping, comparison, graphic analysis, statistical research methods and expert evaluation, morphological analysis, lexicographical analysis, directive interview, analysis of factors, and sensitivity analysis. Calculations and data processing were carried out using MS Excel.

## **The scientific novelties of the research and main results:**

### **The scientific novelty and main results**

The novelty of the Doctoral dissertation research work:

- performing the analysis of the essence of financial viability and its connection with the definitions of other concepts, the concept of “financial viability” has been specified;
- the whole set of indicators for analyzing financial viability of the non-finance sector companies at the macro level which is included in the methodology offered by the International Monetary Fund (IMF) has been used at the level of the industry sector and micro level within the framework of the given research work for investigating a company’s financial viability in the context of sustainable development;
- the marginal values of the indicators of financial viability and the levels of their adequacy have been determined, as well as the methods for their identification have been elaborated;
- the structural model for sustainable development in which the degrees of significance of the elements providing financial viability are defined based on the principles of harmony has been elaborated;
- the model for assessment of the contribution of financial viability to sustainable development has been elaborated, and also the assessment of the level of the theoretical and real contribution of the service companies in Latvia has been done;
- the complex approach to the analysis of insolvency and bankruptcy forecast as an anti-recession tool which is based on the principles of rating of the criteria has been worked out;
- the complex factor analysis of financial viability of the service companies in Latvia has been performed;
- the principles of managing financial viability on the basis of their elasticity in accordance with the factors which influence them have been suggested.

### **The approbation and practical application of the results of the research**

Results of the research works have been discussed in the Republic of Latvia, the Republic of Belarus, Lithuania, Bulgaria, the Czech Republic, which is confirmed by the publications of the respective materials in the scientific issues.

Results of the doctoral dissertation have been reflected in the following projects: LR IZM – RTU project R7358 „Risk Capital and Entrepreneurship Directed towards Innovations in Latvia: Assessment of Factors Influencing Development”; LR IZM – RTU ZP-2008/11 project "The evaluation of intellectual capital influence on innovative behavior of small and medium sized companies”.

### **Scientific publications**

The results of the doctoral dissertation are presented in 19 scientific issues in the English and Russian languages, int. al. 11 publications in **internationally generally accepted and reviewed collections of scientific proceedings**:

- 1) Koleda N., Lace N. Dynamic Factor analysis of financial viability of Latvian service sector companies. *Economics and Management* 2010. – Nr.15, 2010, 620-626 pp. - ISSN: 1822-6515 (EBSCO).
- 2) Koleda N., Lace N. Sensitivity analysis of Indicators of company's financial viability. *Management and Engineering'10*. – Nr.1/117, Sofia : Technical University of Sofia, 2010, 551-560 pp. - ISSN: 1310-3946.
- 3) Koleda, N., Lace, N. Ciemleja G. Quantitative harmonious model of sustainability factors: measuring contribution of financial viability / N. Koleda, N. Lace, G. Ciemleja // *The 6th International Scientific Conference : "Business and Management 2010"*, 2010. May, Lithuania, Vilnius. Selected papers. – Vilnius : Technika, 2010, 104-112 pp. - ISSN: 2029-4441 (ISI Web of Knowledge).
- 4) Koleda N., Lace N. Analysis of financial viability in the context of company's sustainability. *Scientific Journal of Riga Technical University*. – Nr. 19, 2009, 53-62 pp. - ISSN: 1407-7337 (EBSCO).
- 5) Koleda N., Lace N. Development of comparative-quantitative measures of financial stability for Latvian enterprises. *Economics and Management* 2009. - Nr.14, 2009, 78-85 pp. - ISSN: 1822-6515 (EBSCO).
- 6) Koleda N., Lace N. Indicators of Financial Viability of Non-Financial Companies / N. Koleda, N. Lace // *RTU 50th International Scientific Conference : The problems of development of national economy and entrepreneurship*, Riga, 15 October – Riga : RTU, 2009. – 14 pages. - ISBN: 978-9984-32-173-8 (CD).
- 7) Lace N., Koleda N. Selecting the right tool for evaluating of solvency: the case of Latvian Enterprises / N. Lace, N. Koleda // *The 5th International Scientific Conference : "Business and Management 2008"*, 2008. May, Lithuania, Vilnius. Selected papers. - Vilnius: Technika, 2008, 162.-168.pp. - ISBN: 978-9955-28-311-9 (ISI Web of Knowledge).
- 8) Lace N., Koleda N. New insight into elements of intellectual capital / N. Lace, N. Koleda // *First international science conference "Knowledge Society"*, 2008. September, Bulgarian, Sozopol. – Sozopol : Knowledge Society Institute, 2008, 43.- 46.pp. - ISSN: 1313-4787.
- 9) Lace N., Koleda N. Key factors of financial stability of enterprises: case from Latvia / N. Lace, N. Koleda // *VI International Scientific Conference "Management, economics and business development in the new European conditions"*, 2008. May, Brno, Czech Republic. - Brno : Brno University of Technologies, 2008. 12 pages. – ISBN 978-80-7204-582-2 (CD).
- 10) Лаце Н., Коледа Н. Проблема оценки платежеспособности предприятия / Н. Лаце, Н. Коледа // *6 Международная научно-техническая конференция «Наука – образованию, производству, экономике»*, 2008. Декабрь-Февраль, Беларусь, Минск. – Минск : БНТУ, 2008, 118.-123.с. - ISBN 978-985-479-826-4.
- 11) Lace N., Koleda N. Intellectual Capital as a key factor of financial stability of a company / N. Lace, N. Koleda // *49th International Scientific Conference of Riga Technical University "The problems of development of national economy and entrepreneurship"*, 2008. October, Latvia, Riga. - Riga : CD, 2008, 6 pages.- ISBN 978-9984-32-567-5.

**Other publications:**

- 1) Koleda N., Lace N. Marginal values of company's financial viability indicators. / N. Koleda, N. Lace // The 16th International Scientific Conference : Economics and Management 2011, 2011. April, Czech Republic, Brno. – Brno : Brno University of Technologies, 2011. – 19-20 pp. ISBN: 978-80-214-4279-5.
- 2) Koleda N., Lace N. Dynamic Factor analysis of financial viability of Latvian service sector companies / N. Koleda, N. Lace // The 15th International Scientific Conference : Economics and Management 2010, 2010. April, Latvia, Riga. – Riga : RTU Publishing House, 2010. – 131-132 pp. ISBN: 978-9955-25-662-5.
- 3) Koleda N., Lace N., Ciemleja G. Quantitative harmonious model of sustainability factors: measuring contribution of financial viability / N. Koleda, N. Lace, G. Ciemleja // The 6th International Scientific Conference : Conference Business and Management 2010, 2010. May, Lithuania, Vilnius. – Vilnius : Vilnius Gediminas Technical University, 2010. – 1 page. ISSN: 2029-428X (CD).
- 4) Koleda N., Lace N. Development of comparative-quantitative measures of financial stability for Latvian enterprises / N. Koleda, N. Lace // International scientific conference : „Economics and Management 2009”, 2009. April, Lithuania, Kaunas. – Kaunas : Kaunas University of Technology, 2009. - 36-37 pp. ISBN: 978-9955-25-662-5.
- 5) Koleda N., Lace, N. Indicators of Financial Viability of Non-Financial Companies / N. Koleda, N. Lace // RTU 50th International Scientific Conference : The problems of development of national economy and entrepreneurship, 2009. October, Latvia, Riga. – Riga : RTU Publishing House, 2009. – 28 lpp. ISBN: 978-9984-32-173-8.
- 6) Lace N., Koleda N. Intellectual Capital as a key factor of financial stability of a company. 49th International Scientific Conference of Riga Technical University “The problems of development of national economy and entrepreneurship”, 2008. October, Latvia, Riga. – Riga : RTU, 2008, 80-81.pp. - ISBN: 978-9984-32-567-5.
- 7) Lace N., Koleda N. Key factors of financial stability of enterprises: case from Latvia .VI International Scientific Conference “Management, economics and business development in the new european conditions”, 2008. May, Czech Republic, Brno. - Brno : Brno University of Technology, 2008, 53.pp. – ISBN: 978-80-7204-582-2.
- 8) Lace N., Koleda N. Selecting the right tool for evaluating of solvency: the case of Latvian Enterprises . The 5th International Scientific Conference “Business and Management 2008”, 2008. May, Lithuania, Vilnius. - Vilnius : Technika, 2008, 81.-82. pp. – ISBN: 978-9955-28-268-6.

The results of the doctoral dissertation are presented and reported at the **following international scientific conferences:**

- 1) 16. International scientific conference „Economics and Management 2011”, Brno, Czech Republic, 27.-29. April 2011.
- 2) Technical University of Sofia 8. International scientific conference “Management and Engineering'10”, Sozopol, Bulgaria, 17.-19. June 2010.

- 3) 6. International scientific conference „Business and Management 2010”, Vilnius, Lithuania, 13.-14. May 2010.
- 4) 15. International scientific conference „Economics and Management 2010”, Riga, Latvia, 22.-23. April 2010.
- 5) RTU 50. International scientific conference „The problems of development of national economy and entrepreneurship”, Riga, Latvia, 15.-16. October, 2009.
- 6) International scientific conference „Economics and Management 2009”, Kaunas, Lithuania, 23.-24. April 2009.
- 7) RTU 49. International scientific conference „The problems of development of national economy and entrepreneurship”, Riga, Latvia, 13.-15. October 2008.
- 8) 1. International scientific conference “Knowledge Society”, Sozopol, Bulgaria, 3.-5. September 2008.
- 9) International scientific seminar „Development of Research Methods: Management of Knowledge”, Riga, Latvia, 26.-29. August 2008.
- 10) 6. International scientific conference “Management, economics and business development in the new European conditions”, Brno, Czech Republic, 23-24. May 2008.
- 11) 5. International scientific conference “Business and Management 2008”, Vilnius, Lithuania, 16.-17. May 2008.
- 12) 6. International scientific practical conference «Science for Education, Production, Economics», Minsk, Belarus, 1.-2. February 2008.

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## ANNEXES

In the first part **“The essence and analysis of the concept of a company's financial viability”** the essence of the concept of financial viability has been studied, the views of some authors on the concept of financial viability have been summarized, the comprehensive morphologic and lexicographic analysis of the basic concepts has been carried out, the definition of the concept of financial viability elaborated by the author of the present research paper has been presented.

In the second part **“Analysis of a company's financial viability”** the methods for analyzing financial viability have been examined, the objectiveness of the indicators included in the IMF methodology from the viewpoint of a holistic approach to the study of a company's financial viability has been verified, the application of these indicators has also been complemented with the marginal values of the indicators of financial viability.

In the third part **“The contribution of financial viability to the provision of a company's sustainable development”** the structural model for sustainable development using the principles of harmony has been elaborated, the methodology for assessing the contribution of financial viability to the provision of sustainable development within the framework of the given methodology has been suggested. The assessment of the theoretical contribution of financial viability to the provision of sustainable development has also been carried out.

In the fourth part, **“Development of the mechanism for managing a company's financial viability”** the mechanism for managing financial viability on the basis of the analysis of the factors of financial viability and elasticity according to the factors of influence has been suggested. A complex approach to the solvency analysis and bankruptcy probability forecast has been developed within the framework of the given part.

The fifth part **“Practical study of financial viability of the service companies in Latvia”**. In the methodology offered by IMF the indicators of financial viability of

the non-finance sector companies are practically applied to the study of the medium-sized and small businesses operating in the service sphere in Latvia; the contribution of financial viability to the provision of sustainable development on the basis of the data of financial accounts of the medium-sized and small businesses operating in the service sphere in the Riga region has been evaluated; the analysis of the factors of financial viability of the above mentioned companies and the analysis of sensitivity have been carried out, the suggestions for the increase in the level of financial viability have been developed; the testing of the suggested mechanism for managing financial viability within the framework of a harmonious structural model of sustainable development on the example of the successful and insolvent companies has been carried out.

In the sixth part **“Practical approbation of a harmonious structural model of a company’s sustainable development on the basis of the experience of different companies”** the practical testing of the innovations of the present research work has been performed on the basis of the experience of successful and insolvent companies.

In the final chapter of the dissertation the most important **conclusions and proposals** obtained during the research work are summarized.

The research tasks set for doctoral dissertation have been solved and the goal has been achieved.

The doctoral dissertation has been written at the Department of Economics of Production and Entrepreneurship of the Faculty of Engineering Economics and Management of the Riga Technical University in the field of Management Science (Business Administration) according to the requirements defined in the Law „On Scientific Activity” (05.05.2005), in correspondence with the Regulations of the Cabinet of Ministers (No. 1001 from 27.12.2005), and according to the requirements of Latvian Council of Science and Doctoral Studies Provisions of the Riga Technical University (29.06.2009).

The doctoral dissertation has been elaborated with the support of the European Social Fund to the project „Support for the Development of Doctoral Studies at the RTU”.

## MAIN SCIENTIFIC ACHIEVEMENTS

### 1. THE ESSENCE AND ANALYSIS OF THE CONCEPT OF A COMPANY'S FINANCIAL VIABILITY

*The chapter consists of 18 pages, 10 tables and 3 figures.*

In the theory of economic analysis, financial viability is understood as a complex concept which characterizes a level of usage of financial as well as all other resources which the organization possesses. Financial viability is an economic condition of the organization that creates conditions for a stable favorable income to expenditure ratio, the efficient use of resources, and a steady reproduction process under the conditions of the active influence of internal and external factors (Zhevak, 2006). It is important to point out that in the English-speaking and Russian-speaking literature on financial management special attention is paid to a company's financial viability, its assessment and provision, although, there is still no consistent conceptual definition of this phenomenon. There are certain peculiarities of the approaches to the definition of the given concept in the scientific works by the authors from the neighboring countries, which can be divided into three groups for convenience:

- 1) *The authors who associate the given concept with a company's solvency and understand financial viability as a result of the company's activity achieved by means of the efficient use and distribution of financial resources can be referred to as the first group.* (L. Mahova, N. Grazhdankin, J. Negashev, A. Litovskih, M. Abryutina, A. Grachov and others)
- 2) *Considerably fewer authors, who we refer to as the second group, reckon that financial viability is closely connected to the concept of sustainable development and is one of the factors which provides it. The given authors associate the concept of financial viability with the process of operating a business activity.* (R. Dronov, J. Bunina, L. Kravchenko, V. Sergeyeva, M. Melnik, R. Papehin and others)
- 3) *The third group of authors define financial viability through the concepts of balance and risk.* (N. Kulbaka, G. Savickaya, O. Shoshtajev, I. Senyugina, J. Gukalova and Y. Fedotova).

In western literature the concept of financial stability is not strictly defined. The majority of authors pay attention to the financial viability indicators in the context of long-term perspective. For example, authors examine the financial viability of an enterprise characterizing it in the following way:

- 1) The ability of an entity to continue to achieve its operating objectives and fulfill its mission over the long term (Loan Finance dictionary, 2009).
- 2) The ability of an organization to raise the funds required to meet its functional requirements in the short, medium and long-term (Lusthaus, 2002).

The difference in defining the concept of financial viability in the Russian-speaking and English-speaking sources lies in the fact that the Russian speaking authors put the emphasis on the company's solvency in the short-term prospect

whereas the English-speaking authors refer it to the profitability in the long-term prospect and strategic orientation to sustainable development in the future.

It should be emphasized that both the Russian-speaking and English-speaking authors consider the issue of sustainable development, whose external manifestations are competitiveness and attractiveness for investments, within the context of financial viability.

The morphological analysis of financial viability concept in the context of sustainability of company, intends the research of such interrelating concepts like equilibrium, stability, development, financial, viability, to sustain, to hold up. The author suggests the following system representation of interconnection between financial viability and sustainable development:

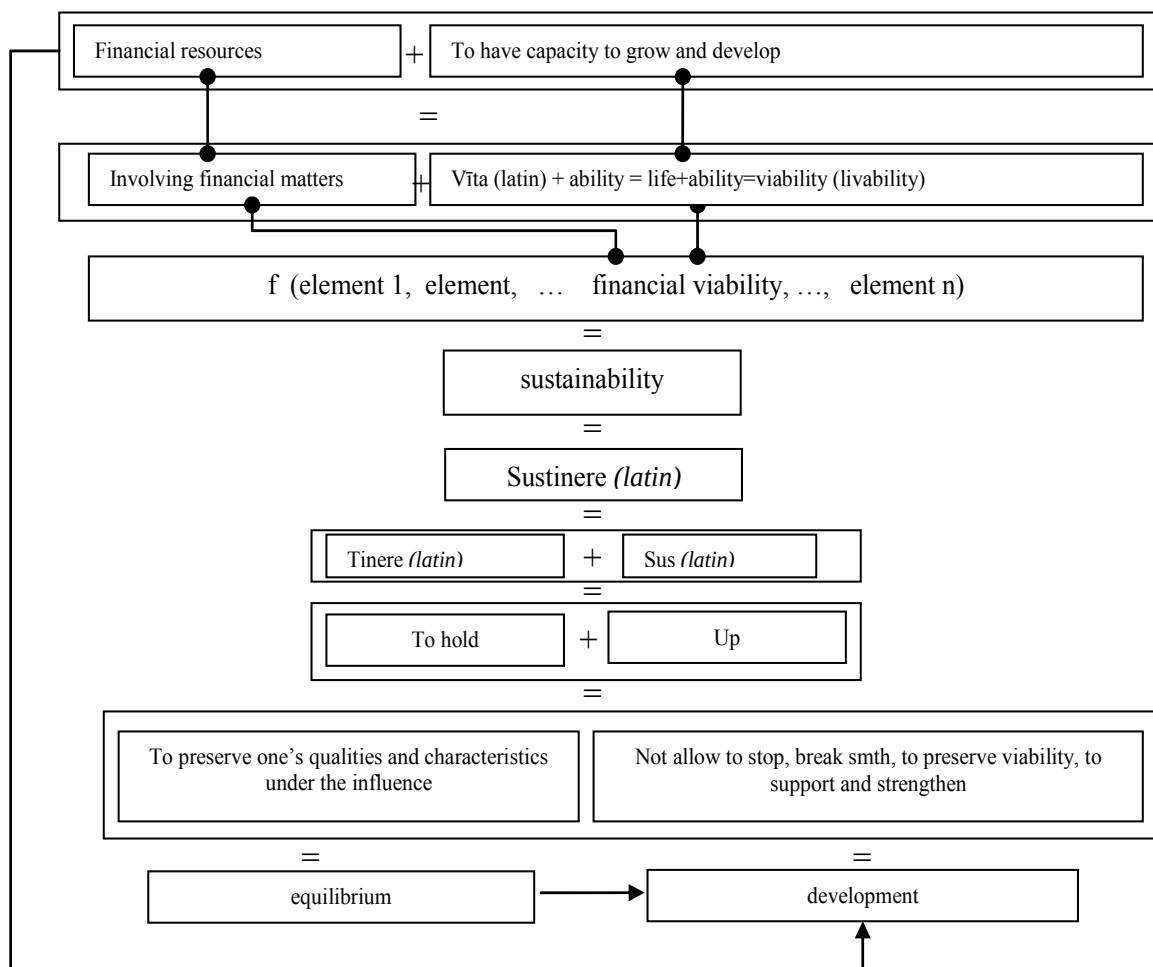


Fig.1. System representation of interconnection between financial viability and sustainable development

**Definition and lexicographic analysis** of the concept “financial viability” was carried out. During this analysis the following concepts were investigated: *stability*; *solvency*; *viability*; *development*. The results of the lexicographic analysis of the definitions are presented on the fig.2.

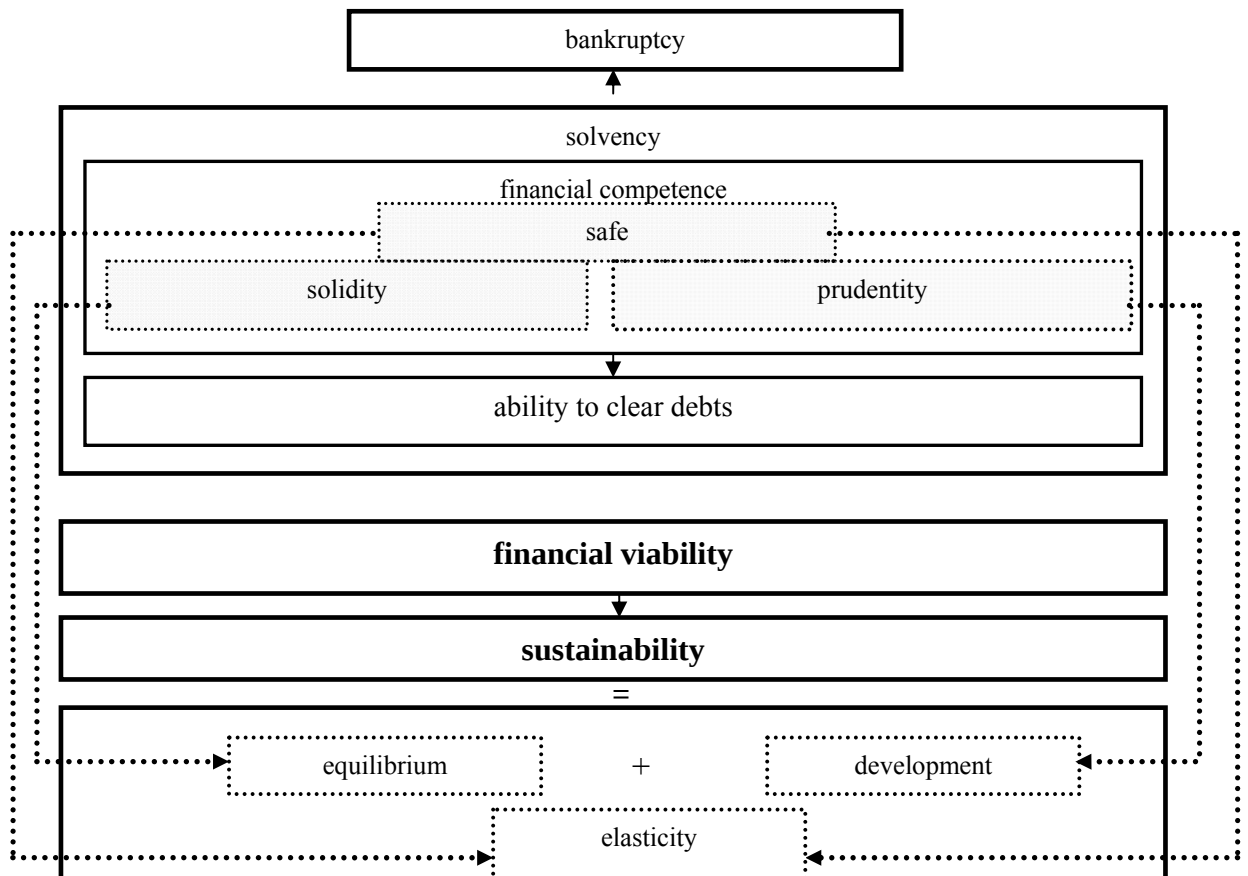


Fig.2. Definition and lexicographic analysis of the concept “financial viability”

Definition and lexicographic analysis of the concept “financial viability” allows presenting the functional interrelation between analyzed concepts:

- 1) «Financial viability» is a factor of achieving the «sustainable development». «Equilibrium», «development» and «elasticity» defines the level of financial viability.
- 2) «Development», «equilibrium» and «elasticity» provide the «financial viability». «Prudentity» is the basis for «development», but «solidity» – for «equilibrium». «Safety» means «elasticity».
- 3) «Financial competence» is a direct result of «stability», «prudence» и «safety»
- 4) A company's «solvency» is the «ability to cover debts» and it depends on the company's «financial competence», i.e. the ability to take bold and goal-oriented decisions, to be resistant to influencing factors. Furthermore, «bankruptcy», in accordance with the laws of the Republic of Latvia, is one of the final court decisions in legal proceedings on «insolvency».

While developing the understanding of the concept of “financial viability” on the basis of the morphologic analysis, the lexicographic analysis of the definitions of the concept “financial viability” and comparative analysis of the means of defining financial viability, the author of the present Doctoral dissertation research work has concluded, that the financial viability is such distribution and use of financial resources which allows to sustain the state of a company's equilibrium in a short-term period and provide sustainable development of a company in a long-term period.

## 2. ANALYSIS OF A COMPANY'S FINANCIAL VIABILITY

*The chapter consists of 23 pages, 6 tables, 4 figures and 23 formulas.*

Assessment of the level of a company's financial viability in most of the sources is limited to the analysis of some quantitative and qualitative financial indicators. The analysis of financial and economic literature allowed determining the frequency of application of such indicators. The following indicators turned out to be the most frequently used: debt to equity ratio; working capital financed by owner's equity; solvency ratio; sustainability ratio (Mahova, 2009; Zhulega, 2006; Rusak, 1999; Kulbaka, 2009 and others).

In the course of scrutinizing the scientific literature, the author has concluded that there is no publicly available information about any kind of a uniform approach to the analysis of financial viability of the companies which belong to the non-financial sector. Nevertheless, there is a special methodology elaborated by the specialists from the International Monetary Fund for the analysis of financial viability of the financial sector which also includes the analysis of the non-financial sector companies. The total of indicators included in the IMF methodology for analyzing financial viability of the non-finance sector companies involves the following characteristics (SVF, 2007): debt to equity ratio; profitability of equity, profitability of assets and business profitability; interest coverage ratio; currency positions; the number of claims for relief from creditors. *Debt to equity ratio* shows the vulnerability of a company in cases of distress, as well as the ability of the enterprise to pay off the debts. *Profitability of equity*, profitability of assets and *profitability of sales* is the most significant factor which determines financial viability, as well as sustainability in general. *The interest coverage ratio* reflects the ability to process the loan. *The number of claims for relief from creditors* is an indicator of the aggregate number of non-financial corporations' residents, which during the period under review, applied for protection from creditors. This indicator has not been observed within the framework of the present research, as it does not refer to certain companies. *The currency positions ratio* reflects the exposure to currency risk. This indicator has not been examined within the framework of the present research as it reflects the influence of external factors which are not possible to control with the resources of internal potential of some companies. The indicators included in the IMF methodology fully reflect the existing ideas about the assessment of the company's financial viability in the scientific literature, and confirm the results of the morphologic and definition and lexicographic analysis which has been carried out by the author. Representativeness of the results obtained by means of the given indicators has also been verified. The author has carried out a comparative assessment of the dynamics of change in registered companies ratio in the service sphere in the Riga region on the one hand, and the dynamics of change in the true value of the indicators of financial viability on the other, and has come to the conclusion that the results of the analysis on the basis of the indicators included in the IMF methodology are representative, nevertheless the authors see some limitations in their application on the micro-level: 1) the indicators can be analyzed only in dynamics; 2) methodology doesn't provide the general evaluation of financial viability; 3) methodology does not presuppose the factor analysis and sensitive

analysis of certain indicators, the methodology does not presuppose the mechanism for managing financial viability. Identifying the adequate level of financial viability refers to the most vital economic issues, since inadequate financial viability can result in the lack of resources for development, insolvency and bankruptcy of the company, but the surplus viability can impede development burdening the company with excessive stock and reserves. In order to identify the adequate level of financial viability the author suggests the following distribution of the zones of financial viability (see 3 fig.):

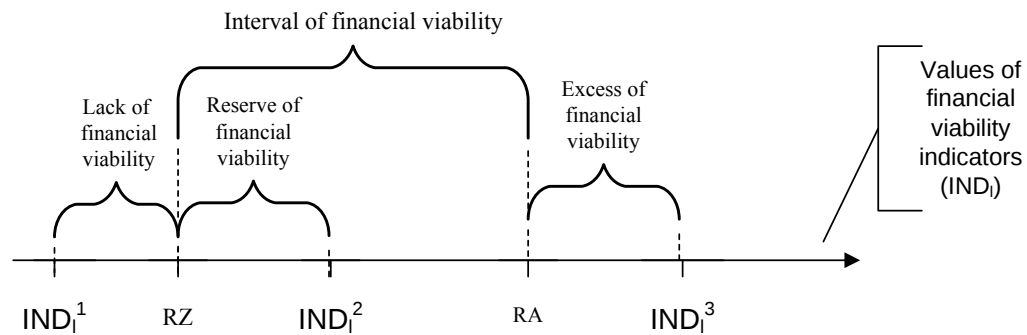


Fig.3. The zones of financial viability

*Explanation, figure 3:°*

$IND_i^1$ ;  $IND_i^2$ ;  $IND_i^3$  – values of financial viability indicators;

$l$  – indicator of financial viability;

$RZ$  – lower margin of financial viability zone;

$RA$  – upper margin of financial viability zone;

$\{-\infty; RZ\}$  – zone of financial instability;

$[RZ; RA]$  – interval of financial viability zone;

$\{RA; +\infty\}$  – zone of financial viability excess;

$IND_i^1 \in \{-\infty; RZ\}$  – the value of indicator situates in the zone of financial instability;

$IND_i^2 \in [RZ; RA]$  – the value of indicator situates in the zone of financial viability;

$IND_i^3 \in \{RA; +\infty\}$  – the value of indicator situates in the zone of financial viability excess.

In order to calculate the level of adequate financial viability, the sphere of financial viability, reserve, surplus or lack of indicators of financial viability, the author suggests introducing the additional concepts:

1. «lower margin» – such value of indicator under which the level of financial viability is the lowest, but permissible for business activity without a risk of bankruptcy;
2. «upper margin» of indicator - such value of indicator under which the level of financial viability is the highest however the further increase of the value of financial viability indicator is capable to upset the equilibrium condition of the enterprise.

Calculation of the level of sufficiency, reserve, surplus or lack of the indicators of financial viability is a prerequisite for identifying the degree of contribution of financial viability to providing a sustainable development in order to further elaboration of the mechanism for managing financial viability. It is necessary to point out that depending on how growth or fall in the numerical value of the indicator influences the level of the company's financial viability, the approaches to calculations of the indicators mentioned above will differ (see Table 1.).

Table 1

## Characteristic values of financial viability

| Characteristic values of financial viability according to the <i>l</i> indicator | There is direct dependence between the numerical value of <i>l</i> indicator and the level of financial viability |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                       | There is inverse dependence between the numerical value of <i>l</i> indicator and the level of financial viability                                              |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
|                                                                                  | Calculation of lower marginal value                                                                               |                                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                   | Explanation                                                           | Calculation of lower marginal value                                                                                                                             |         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Explanation                                                           |
| Lower marginal value                                                             | Indicators                                                                                                        | Formula                             | $P_{pk}$ – sufficiency level of equity, Ls;<br>$AL$ – liabilities, Ls;<br>$AL_{ist}$ – short-term liabilities, Ls;<br>$PM$ – interests, Ls;<br>$RZ_{pkr}$ - lower marginal value of profitability of equity;<br>$RZ_{akr}$ – lower marginal value of profitability of assets;<br>$IZD$ – expenditures, Ls;<br>$RZ_{imr}$ - lower marginal values of profitability of sales;<br>$PZ_{pms}$ – lower marginal values of interest coverage ratio. | The increase of numerical value of indicator can cause the insolvency | Indicators                                                                                                                                                      | Formula | $P_{pk}$ - sufficiency level of own capital, Ls;<br>$P_{al}$ - sufficiency level of liabilities, Ls;<br>$RZ_{apk}$ - lower marginal value of debt-to-equity ratio.<br>$RZ_{apk}^3$ - lower marginal value of debt-to-equity ratio, taking into account the specific of legislation.<br>$AKR$ - profitability of assets %.<br>$PML_{vid}$ - average rate of interests, %.<br>$PNL$ - the rate of profit tax, decimal number.<br>$RZ_{apk}^1$ - lower marginal value of debt-to-equity ratio according to the common approach.<br>$RZ_{apk}^2$ - lower marginal value of debt-to-equity ratio taking into account the financial leverage effect ;<br>$RA_{pkr}$ – upper marginal value of profitability of equity, %. | The increase of numerical value of indicator can cause the insolvency |
|                                                                                  | Profitability of equity                                                                                           | $RZ_{pkr} > (PM + AL_{ist})/P_{pk}$ |                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                       | $RZ_{apk} = \min[RZ_{apk}^1; RZ_{apk}^2; RZ_{apk}^3] \geq 0$<br><br>$RZ_{apk}^1 = P_{al}/P_{pk}$<br><br>$RZ_{apk}^2 = RA_{pkr}/((1 - PNL) * (AKR - PML_{vid}))$ |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |
|                                                                                  | Profitability of assets                                                                                           | $RZ_{akr} = PM/AL$                  |                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                       |                                                                                                                                                                 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |
|                                                                                  | Profitability of sales                                                                                            | $RZ_{imr} = (PM + AL_{ist})/IZD$    |                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                       |                                                                                                                                                                 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |
|                                                                                  | Interest coverage ratio                                                                                           | $PZ_{pms} = 1$                      |                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                       |                                                                                                                                                                 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |

Table 1 continuation

| Characteristic values of financial viability according to the <i>l</i> indicator | There is direct dependence between the numerical value of <i>l</i> indicator and the level of financial viability |                                                                                   |                                          |                                         | There is inverse dependence between the numerical value of <i>l</i> indicator and the level of financial viability |                                                                                                                                                                                                                |                                                    |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                           |                                              |                                                                                                                                                                                                                |                                              |  |  |  |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--|--|--|
|                                                                                  | Calculation of upper marginal value, sufficiency level                                                            |                                                                                   |                                          | Description                             | Explanation                                                                                                        | Calculation of upper marginal value, sufficiency level                                                                                                                                                         |                                                    |                                                                                                                                             | Description                                                                                                                                                                                                                                                                                                               | Expl ana-tion                                |                                                                                                                                                                                                                |                                              |  |  |  |
| Upper marginal value                                                             | Indicators                                                                                                        | Correlation between financial viability indicators                                | Upper marginal value                     | <i>L</i> -current liquidity coefficient | The increase of value can cause the solvency                                                                       | Indicators                                                                                                                                                                                                     | Correlation between financial viability indicators | Upper marginal value                                                                                                                        | <i>RA<sub>apk</sub></i> - upper marginal value of debt-to-equity ratio;<br><i>FS<sub>tr</sub><sup>pk<sub>r</sub></sup></i> - lack of profitability of equity, %.<br><i>PNL</i> - the rate of profit tax, decimal number;<br><i>AKR</i> - profitability of assets;<br><i>PML<sub>vid</sub></i> - average interest rate, %; | The decrease of value can cause the solvency |                                                                                                                                                                                                                |                                              |  |  |  |
|                                                                                  |                                                                                                                   |                                                                                   |                                          |                                         |                                                                                                                    |                                                                                                                                                                                                                |                                                    |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                           |                                              |                                                                                                                                                                                                                |                                              |  |  |  |
|                                                                                  | Liquidity                                                                                                         | Close positive                                                                    | No upper marginal value                  |                                         |                                                                                                                    | Liquidity                                                                                                                                                                                                      | Close positive                                     | Regressive analysis when <i>L</i> ≥1                                                                                                        |                                                                                                                                                                                                                                                                                                                           |                                              | Close negative                                                                                                                                                                                                 | No upper marginal value                      |  |  |  |
|                                                                                  |                                                                                                                   | Close negative                                                                    | Regressive analysis when <i>L</i> ≥1     |                                         |                                                                                                                    |                                                                                                                                                                                                                | Close negative                                     | No upper marginal value                                                                                                                     |                                                                                                                                                                                                                                                                                                                           |                                              |                                                                                                                                                                                                                |                                              |  |  |  |
|                                                                                  |                                                                                                                   | No                                                                                | No upper marginal value                  |                                         |                                                                                                                    |                                                                                                                                                                                                                | No                                                 | No upper marginal value                                                                                                                     |                                                                                                                                                                                                                                                                                                                           |                                              |                                                                                                                                                                                                                |                                              |  |  |  |
|                                                                                  | Debt-to-assets ratio                                                                                              | Close positive                                                                    | Regressive analysis when <i>SAK</i> <0.5 |                                         |                                                                                                                    | Debt-to-assets ratio                                                                                                                                                                                           | Close positive                                     | <i>RA<sub>apk</sub></i> = <i>FS<sub>tr</sub><sup>pk<sub>r</sub></sup></i> / ((1 - <i>PNL</i> ) * ( <i>AKR</i> - <i>PML<sub>vid</sub></i> )) |                                                                                                                                                                                                                                                                                                                           |                                              | Close negative                                                                                                                                                                                                 | Regressive analysis when <i>SAK</i> <0.5     |  |  |  |
|                                                                                  |                                                                                                                   | Close negative                                                                    | No upper marginal value                  |                                         |                                                                                                                    |                                                                                                                                                                                                                | Close negative                                     | Regressive analysis when <i>SAK</i> <0.5                                                                                                    |                                                                                                                                                                                                                                                                                                                           |                                              |                                                                                                                                                                                                                |                                              |  |  |  |
|                                                                                  |                                                                                                                   | No                                                                                | No upper marginal value                  |                                         |                                                                                                                    |                                                                                                                                                                                                                | No                                                 | No upper marginal value                                                                                                                     |                                                                                                                                                                                                                                                                                                                           |                                              |                                                                                                                                                                                                                |                                              |  |  |  |
|                                                                                  | Actual sufficiency level of <i>l</i> indicator                                                                    | <i>Pf<sub>l</sub></i> = ( <i>IND<sub>l</sub></i> / <i>RZ<sub>l</sub></i> ) * 100% |                                          |                                         |                                                                                                                    | <i>Pf<sub>l</sub></i> – actual sufficiency level of <i>l</i> indicator;<br><i>IND<sub>l</sub></i> - actual value of <i>l</i> indicator;<br><i>RZ<sub>l</sub></i> – lower marginal value of <i>l</i> indicator. | The increase of value can cause the solvency       | <i>Pf<sub>l</sub></i> = ( <i>RZ<sub>l</sub></i> / <i>IND<sub>l</sub></i> ) * 100 %                                                          |                                                                                                                                                                                                                                                                                                                           |                                              | <i>Pf<sub>l</sub></i> – actual sufficiency level of <i>l</i> indicator;<br><i>IND<sub>l</sub></i> - actual value of <i>l</i> indicator;<br><i>RZ<sub>l</sub></i> – lower marginal value of <i>l</i> indicator. | The decrease of value can cause the solvency |  |  |  |
|                                                                                  |                                                                                                                   |                                                                                   |                                          |                                         |                                                                                                                    |                                                                                                                                                                                                                |                                                    |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                           |                                              |                                                                                                                                                                                                                |                                              |  |  |  |

Table 1 continuation

| Characteristic values of financial viability according to the <i>l</i> indicator | There is direct dependence between the numerical value of <i>l</i> indicator and the level of financial viability |                                                                                                                                                     |                                                                                                                                                                                               | There is inverse dependence between the numerical value of <i>l</i> indicator and the level of financial viability |                                                                                                                                          |                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                  | Calculation of reserve, excess, lack of financial viability                                                       | Description                                                                                                                                         | Explanation                                                                                                                                                                                   | Calculation of reserve, excess, lack of financial viability                                                        | Description                                                                                                                              | Explanation                                                                                                                                                                                        |
| <b>Financial viability reserve according to the <i>l</i> indicator</b>           | $FS_{rez}^l = Pf_l - 100\%$                                                                                       | $FS_{rez}^l$ - financial viability reserve according to the <i>l</i> indicator                                                                      | Calculated in percentages. Is calculated in cases when sufficiency level of <i>l</i> indicator exceeds 100%                                                                                   | $FS_{rez}^l = 100\% - Pf_l$                                                                                        | $FS_{rez}^l$ - financial viability reserve according to the <i>l</i> indicator                                                           | Calculated in percentages. Is calculated in cases when sufficiency level of <i>l</i> indicator exceeds 100%                                                                                        |
| <b>Financial viability lack according to the <i>l</i> indicator</b>              | $FS_{tr}^l = 100\% - Pf_l$                                                                                        | $Pf_l$ – actual sufficiency level of <i>l</i> - <i>ta</i> indicator;<br>$FS_{tr}^l$ - financial viability lack according to the <i>l</i> indicator. | Calculated in percentages. Is calculated in cases when sufficiency level of <i>l</i> indicator is less than 100%. Means the necessity to increase the numerical value of indicator.           | $FS_{tr}^l = Pf_l - 100\%$                                                                                         | $Pf_l$ – actual sufficiency level of <i>l</i> indicator;<br>$FS_{tr}^l$ - financial viability lack according to the <i>l</i> indicator   | Calculated in percentages. Is calculated in cases when sufficiency level of <i>l</i> indicator is less than 100%. Means the necessity to decrease the numerical value of indicator.                |
| <b>Financial viability excess according to the <i>l</i> indicator</b>            | $FS_{par}^l = (Pf_l - RA_l) / RA_l$                                                                               | $FS_{par}^l$ - financial viability excess according to the <i>l</i> indicator;<br>$RA_l$ - upper marginal value of <i>l</i> indicator.              | Calculated in percentages. Is calculated in cases when actual value of <i>l</i> indicator exceeds its upper marginal value. Means the necessity to decrease the numerical value of indicator. | $FS_{par}^l = (Pf_l - RA_l) / RA_l$                                                                                | $FS_{par}^l$ - financial viability excess according to the <i>l</i> indicator;<br>$RA_l$ - upper marginal value of <i>l</i> indicator.   | Calculated in percentages. Is calculated in cases when actual value of <i>l</i> indicator is less than its upper marginal value. Means the necessity to increase the numerical value of indicator. |
| <b>Financial viability interval according to the <i>l</i> indicator</b>          | $FS_{apg}^l = RA_l - RZ_l$                                                                                        | $FS_{apg}^l$ - financial viability interval according to the <i>l</i> indicator;<br>$RZ_l$ - lower marginal value of <i>l</i> indicator.            | Presents the interval of permissible numerical values of financial viability indicators                                                                                                       | $FS_{apg}^l = RZ_l - RA_l$                                                                                         | $FS_{apg}^l$ - financial viability interval according to the <i>l</i> indicator;<br>$RZ_l$ - lower marginal value of <i>l</i> indicator. | Presents the interval of permissible numerical values of financial viability indicators                                                                                                            |

### 3. THE CONTRIBUTION OF FINANCIAL VIABILITY TO THE PROVISION OF A COMPANY'S SUSTAINABLE DEVELOPMENT

*The chapter consists of 17 pages, 2 tables, 2 figures and 5 formulas.*

Companies all over the world understand the urgency of the concept of a sustainable development. Nowadays more than 90% of managers put more effort to include social, ecological and economic aspects into the strategy of business development than 5 years ago. (Business in Society Gateway, 2007).

Sustainable development is the process of change in which the exploitation of resources, direction of investments, orientation of scientific and technical development and institutional changes are reconciled with each other and enhance the present and future potential of the company (Shershnyova, 1999).

Within the present research the author has assumed as a basis one of the latest models of sustainable development which presupposes the division of the factors providing sustainable development into internal and external, as well as 4 dimensions of sustainable development: financial, social, organizational, ecological.

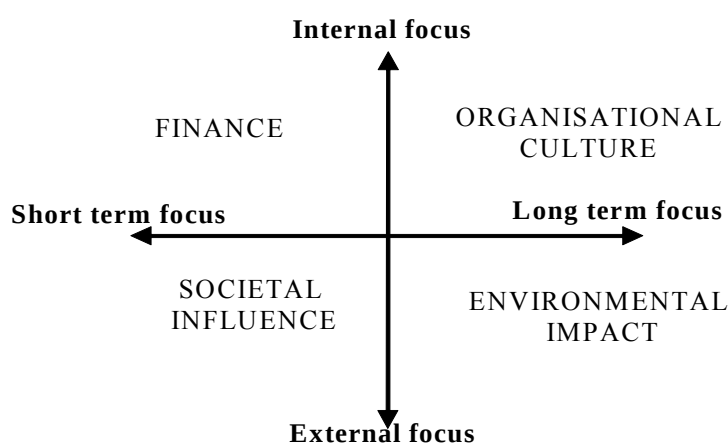


Fig.4. Model of Corporate sustainability  
(Aras&Growther 2007)

Modern business environment dynamically changes, disharmonic situations and uncertainty in the enterprise's internal environment appear, and it becomes unstable and difficult to anticipate. Sustainable development virtually relies on the result which is achieved under the complex circumstances since in reality there are situations when not all factors are available in sufficient quality and it is necessary to compensate the missing factor for the other one.

The author reckons that sustainability dimensions are important and processes undergoing at the enterprise from insignificant and everyday ones to strategic and complex ones determine the possibilities for sustainable development. They testify a certain balance of power and resources, which enables the system to sustain the influence of external forces and resist the internal ones. Sustainable development is based on the understanding of and ability to include and implement all structural

elements of sustainability dimensions in all subsystems of the enterprise: the management system, and functional and resource systems. Thus the general efficiency of the system depends on a certain harmony between the system elements and the state of dynamic equilibrium.

The solution of the problem of harmonious interconnection between the elements of sustainability system the authors see in the development of a quantitative harmonious model of sustainability provision. In order to evaluate the contribution of the finance dimension in the provision of sustainability the authors use the indicators (debt to equity ratio, profitability of assets; profitability of sales, interest coverage ratio) included into the methodology of evaluation of financial viability offered by the International Monetary Fund

Since the enterprise's sustainable development is determined by external and internal factors and the results of the enterprise's activity, the sustainability model is formed from subordinate levels which include sustainability dimensions and their elements. The authors presented the system of factors for provision of a sustainable development demonstrating the finance dimension in detail, in the Fig 5:

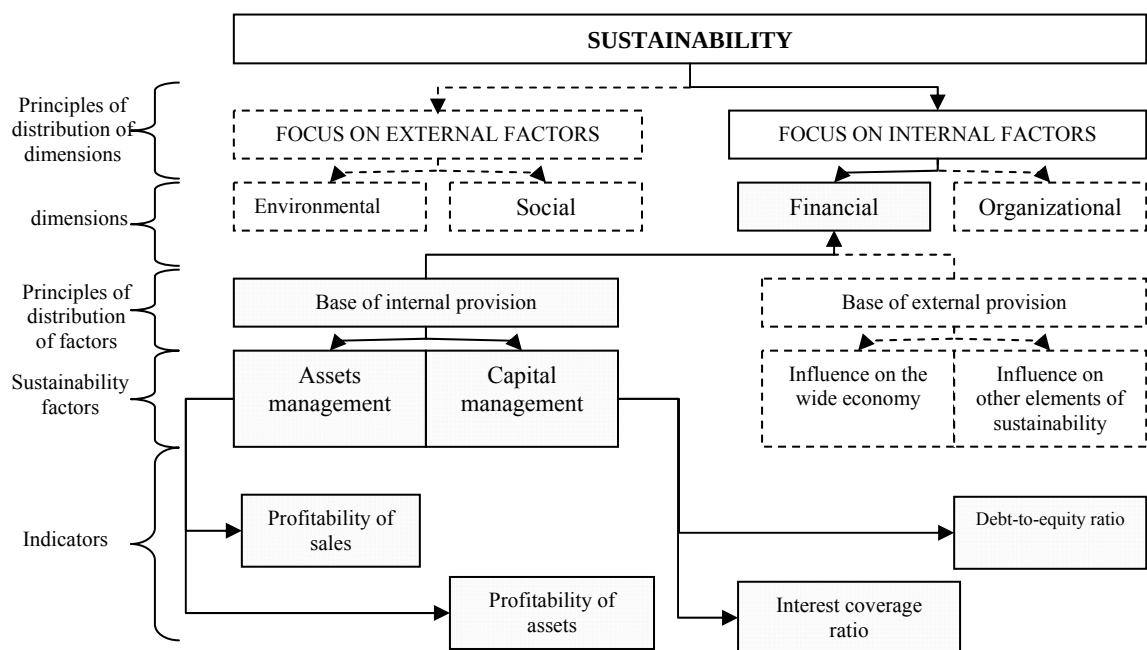


Fig.5. The elements of sustainable development in the frames of harmonious structural model

The scheme (see fig.5) presents:

1. Four dimensions of sustainable development and its distribution principles;
2. Sustainability factors in the frame dimension of financial viability and their distribution principles;
3. Financial viability indicators which determine the factors of sustainable development.

It should be underlined that the factors and indicators of financial viability in the given model are distributed on the basis of the following approach: Financial viability

can be provided by efficient management of the assets and capital within the company (see. Fig.5) The author divided the indicators of financial viability into two groups. Assets profitability and sales profitability fall into the first group of indicators which characterize the efficiency of assets management. Debt to equity ratio, interest payment ratio fall into the second group of indicators which characterize the efficiency of capital management. As for providing a company's harmonious sustainable development it is necessary to consider the symmetry condition (in accordance with the rule of golden section), the author has not included the indicator of profitability of equity in the harmonious model of structural components of sustainable development.

A practical application of the given model presupposes quantitative calculations where every factor and indicator respectively has to obtain a quantitative value. However, here we face a problem of defining weight values of dimensions, factors and indicators of the model of providing sustainable development. Generally, in the financial literature, the weight values of the indicators of financial viability are not determined at all. When applied, they are calculated on the basis of an expert approach and as a result, their evaluation turns out to be rather subjective because it depends on the analysts' competence, experience, interests, etc.

It is crucial to find a universal method for weight distribution between the factors of providing financial viability. For this purpose the author suggests applying the theory of trinitarianism which studies the principles of harmony.

The concept of harmony and harmonious development has a long history but it acquires a special significance in modern science. The basis for the concept of harmony is a notion of "golden section" (goldener Schnitt) which was brought into use by M. Ohm in 1835. Golden section (golden ratio, division into extreme and mean ratio) — division of a continuous quantity into two parts when a smaller part relates to a bigger one as the bigger part to the whole quantity.

Some prominent scientific discoveries on the basis of the harmony principle were made in the second part of the 20<sup>th</sup> century ((quasicrystals, fullerenes, the law of structural harmony of systems, the law of transformation of the spiral biosymmetry, "golden" genomatrix and others).) (Stahov, 2010). It should be pointed out that the given theory also acquired a practical application in the economic sciences (Kryuchkova, 2009; Pitelinskiy, 2009; Aniskin, 2010; Ivanus, 2005; Semiglazov, 2009).

The present research on financial viability within the context of sustainable development is based on the comparison between structural elements of sustainable development and distribution of the values among them on the harmony principle (the golden section rule - 0.62/0.38).

While creating a quantitative harmonious model of sustainability factors, the authors relied on the following assumptions and principles:

1. The role of internal factors is more relevant than the role of external ones because the enterprise can actively influence them adapting to the conditions of the external environment.
2. The financial dimension can be seen as more significant than the organizational one within the framework of a capitalist economic system. Priority of the organizational potential over the financial one could result in the change in the

form of the society organization in a long-term perspective (from capitalism to socialism or other form). Furthermore, the influence of the organizational culture on the efficiency of a company performance is in the focus of a lot of modern research ((such authors as William Ouchi, J. Barney, and the adherents of the Japanese model of management). However, the financial basis for creating, for instance, the efficient system of motivation, guarantees for life-long employment, etc., is a very important factor in this approach, too. (Linder, 2008; Lazareva, 2008)

3. Use of the enterprise's internal capabilities for provision of financial viability is connected with a lesser risk especially in the period of the global finance crisis.
4. Assets management has a higher significance (and weight in our model) as compared to management of capital, as the efficient use of assets provides a relevant profitability of capital (in accordance with the first principles of corporate finances (the principle of investment)) (Damodaran, 2003); efficient assets management is able to compensate for the effects of inefficient structure of capital.
5. Interest coverage ratio is more relevant than debt to equity ratio, since it characterizes the possibility for attracting finance from external sources even if the share of attracted sources of financing is rather high in the structure of capital. In accordance with the first principles of corporate finances (the principle of financing), it is not important from what sources the business is financed (own or borrowed), it is important to increase the value of capital (Damodaran, 2003) Thus, interest coverage ratio is more important than debt to equity ratio because it reflects to a greater extent the company's ability to provide the growth of own capital by means of using borrowed funds.
6. Profitability of sales is an indicator of a company's pricing policy and also of its ability to control expenses. That is why its significance can be seen higher as compared to the significance of asset turnover ratio which reflects the efficiency of management of the asset structure.

In order to confirm such distribution of the structural elements in accordance with their significance, the author has conducted a focused interview with 10 managers who work at Latvian companies providing services. In general, the results of the interviews confirm the distribution of the significance of the structural elements of sustainable development mentioned above.

Distributing of the model's elements relevancies according to the golden section rule is presented in the Table 2.

Table 2

Distribution of the harmonious model's elements weights according to the golden section rule

|              |                                       |                            |                                       |                                              |                                                              |                                        |                                         |                                        |                                       |
|--------------|---------------------------------------|----------------------------|---------------------------------------|----------------------------------------------|--------------------------------------------------------------|----------------------------------------|-----------------------------------------|----------------------------------------|---------------------------------------|
| $a^i_0$      | Sustainability ( $a^1_0$ )            |                            |                                       |                                              |                                                              |                                        |                                         |                                        |                                       |
| $Sv_{a^i_0}$ | 1                                     |                            |                                       |                                              |                                                              |                                        |                                         |                                        |                                       |
| $a^i_1$      | Focus on external factors ( $a^1_1$ ) |                            | Focus on internal factors ( $a^2_1$ ) |                                              |                                                              |                                        |                                         |                                        |                                       |
| $Sv_{a^i_1}$ | 0.38                                  |                            | 0.62                                  |                                              |                                                              |                                        |                                         |                                        |                                       |
| $a^i_2$      | Social ( $a^1_2$ )                    | Environ-mental ( $a^2_2$ ) | Organizational ( $a^3_2$ )            | Financial ( $a^4_2$ )                        |                                                              |                                        |                                         |                                        |                                       |
| $Sv_{a^i_2}$ | 0.14                                  | 0.24                       | 0.24                                  | 0.38                                         |                                                              |                                        |                                         |                                        |                                       |
| $a^i_3$      |                                       |                            |                                       | Base of external provision ( $a^7_3$ )       |                                                              | Base of internal provision ( $a^8_3$ ) |                                         |                                        |                                       |
| $Sv_{a^i_3}$ |                                       |                            |                                       | 0.14                                         |                                                              | 0.24                                   |                                         |                                        |                                       |
| $a^i_4$      |                                       |                            |                                       | Influence on the wide economy ( $a^{13}_4$ ) | Influence on other elements of sustainability ( $a^{14}_4$ ) | Capital management ( $a^{15}_4$ )      |                                         | Asset management ( $a^{16}_4$ )        |                                       |
| $Sv_{a^i_4}$ |                                       |                            |                                       | 0.05                                         | 0.09                                                         | 0.08                                   |                                         | 0.16                                   |                                       |
| $a^i_5$      |                                       |                            |                                       |                                              |                                                              | Debt-to-equity ratio ( $a^{29}_5$ )    | Interests coverage ratio ( $a^{30}_5$ ) | Profitability of assets ( $a^{31}_5$ ) | Profitability of sales ( $a^{32}_5$ ) |
| $Sv_{a^i_5}$ |                                       |                            |                                       |                                              |                                                              | 0.03                                   | 0.05                                    | 0.06                                   | 0.10                                  |

Applying the golden section rule authors have developed quantitative harmonious model of sustainability factors for evaluation of contribution of financial viability to sustainability of company:

$$R_{a_j^i} = (Sv_{a_j^i} * Pf_{a_j^i} / \sum_{i=1}^{2^j} Sv_{a_j^i} * Pf_{a_j^i}) * 100, \quad (1)$$

$$Sv_{a_j^i} = \begin{cases} x * Sv_{a_{j-1}^{(i+1)/2}}, & i = (1, 3, 5, 7, \dots, 31) \\ (1 - x) * Sv_{a_{j-1}^{i/2}}, & i = (2, 4, 6, \dots, 32) \end{cases}, \quad (2)$$

where

$x$  - constant,  $x=0.38$ ;

$R_{a_j^i}$  – contribution of  $a_j^i$  element of the structural model to the provision of sustainability, %;

$$\sum_{i=1}^{2^j} R_{a_j^i} = 100\%$$

$Sv_{a_j^i}$  – weight of  $a_j^i$  element of the structural model;  $\sum_{i=1}^{2^j} Sv_{a_j^i} = 1$

$Pf_{a_j^i}$  – a degree of sufficiency of indicator  $a_j^i$ , %;

if it is less than 0 (zero), then conditionally  $Pf_{a_j^i} = 0$  ;

$j$  – level of the structural model of sustainable development,  $j=(0, 1 \dots 5)$ ;

$i$ - index number of element of  $j$ -th level of the structural model of sustainable development,  $i=(1, 2, 4 \dots 2^j)$ ;

$a_j^i$  –  $i$ -th element of  $j$ -th level.

In the result of calculating a theoretical contribution of financial viability to sustainability under the optimistic scenario, that is when the elements of the sustainability model are in a such state which provides the company with the possibility to perform its functions and preserve its characteristics despite the influence of external and internal forces ( $Pf_{a_j^i} = 1$ ), the following values were obtained:

Theoretical contribution of financial viability due to internal capabilities of the enterprise under the optimistic scenario is 24%, overall contribution of the finance dimension due to internal and external capabilities of the enterprise to the provision of sustainability comprises 38%

#### 4. DEVELOPMENT OF THE MECHANISM FOR MANAGING A COMPANY'S FINANCIAL VIABILITY

*The chapter consists of 37 pages, 11 tables, 6 figures un 13 formulas.*

It is necessary to classify two types of management in the process of elaboration of the mechanism for managing financial viability: **Preventive management** implies the way of management which is focused on permanent control over the level of financial viability and timely prevention of a possibility of its loss or decrease. It is reasonable to apply the preventive way of management if: in the case where the actual

contribution of financial viability exceeds a theoretical value ( $If_{a_j} > It_{a_j}$ ), enterprises have a potential for preserving the state of balance and long-term development; if actual contribution of financial viability is equal to a theoretical one ( $If_{a_j} = It_{a_j}$ ), the company is able to preserve the state of balance and stability but it has no potential for development due to internal capabilities. The main idea of the given way of management is a factor analysis in order to elaborate the preventive measures in the situation when, for instance, it is necessary to decrease the risks or influence of certain factors on the results of business activity. **Crisis management** — is the process of applying forms, methods and procedures aimed at the social and economic improvement of the company's financial and business performance, creating and developing conditions for the escape from a crisis situation. Unlike the preventive method, crisis management is urgent when the company has already lost its financial viability and there is a need for determining a probability of bankruptcy and need for introducing prompt measures for its prevention. Crisis management is implemented, when the actual contribution of financial viability is lower than theoretical ( $If_{a_j} < It_{a_j}$ ), it means the enterprise is not able to sustain the influence of external and internal forces and to develop due to its internal capabilities. In this situation the enterprise's potential growth and stability can be guaranteed only in case of an extremely favorable influence of external factors of financial viability, organizational, social and ecological potential of the company. The basis of this method is forecasting insolvency and bankruptcy in order to determine the degree of difficulties which appeared as a result of low financial viability with a subsequent factor analysis.

As it follows from the analysis of the literature, there are several methods for analyzing solvency and bankruptcy probability forecast. Therefore, there appears the questions which of these are the most efficient and relevant whilst analyzing a company's solvency and bankruptcy probability forecast. In order to elaborate a suggestion for the choice of optimal methods for solvency analysis and bankruptcy forecast for the Latvian service providing companies, the author finds it necessary to create **a classification of methods** presented in the scientific literature. The given classification then allows to single out a priority level for each of the methods observed. The author suggests classifying the methods for solvency analysis in accordance with the following features and characteristics:

1. Credibility of information on the basis of which the models are developed: current data actuality; accessibility to the information required; impartiality and objectivity of information; source of background information is average industry statistics during the previous periods or current data about the company undergoing analysis.
2. Factor completeness, when developing the model; its significance and amount: specifics of industry; specifics of business operation; intellectual capital; specifics of legislation; market situation; number of factors included in the model and their significance; time factor.
3. Complexity of calculations: mathematical expertise of analyst, complexity of algorithm calculations and possibilities to make mistakes; expertise in business processes, expertise in accounting; labor intensity of calculations

4. Validity of results, their possible use in future: likelihood of using results achieved in decision-making, mathematical accuracy of results, evaluation of dynamics, dependence of accuracy of results on expert qualification.

The models and methods may be classified taking into consideration their specific features using the weighted average grades:

$$VS_{z_y} = \sum_{x=1}^m (N_y^x * P_y^x) / \sum_{x=1}^m P_y^x \rightarrow \max, \quad (3)$$

where

$VS_{z_y}$  - weighted average grade of the model  $z$  by the specific feature  $y$  of the classification,  $z=\{1,...,n\}$ ;

$P_y^x$  - priority of  $x$  characteristic of specific feature  $y$  of classification;

$x$  - characteristic of specific feature  $y$ ,  $x=\{1,...,m\}$ ;

$m$  - characteristics of specific feature  $y$  quantity;

$y$  - specific feature of classification,  $y=\{1,...,4\}$ ;

$N_y^x$  - the grade of  $x$  characteristic of specific feature  $y$  of classification.

Classification has allowed distribution of the methods and models for solvency analysis and forecast of a probability of bankruptcy in accordance with the aims of the analysis and resources available for carrying out the analysis.

Table 3.

Breakdown of methods and models for analyzing a company's solvency and bankruptcy probability forecast by the purpose of analysis and existing resources

| The purpose of analysis                                                                                                               | Existing resources                                                                                                                | Most appropriate methods, models                                          |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| To receive the most objective evaluation by means of analysis of large amount of factors                                              | Infinitude of human, time and technological resources                                                                             | Analogy method                                                            |
| To receive the most objective evaluation by means of analysis actual financial reports                                                | Infinitude of human and technological resources, limited time resources                                                           | Downstream dumping analysis                                               |
| To receive the most objective evaluation by means of analysis of actual financial reports to predict the financial state of companies | Internal financial information, infinitude of technological and time resources                                                    | Solvency measurement for a period                                         |
| To receive the results presented the specific of concrete company                                                                     | Internal and external financial data, infinitude of human resources, presence of competent experts                                | Expert valuation method                                                   |
| Fast analysis without extended calculations                                                                                           | Least of human, time and technological resources. Necessity of internal information only.                                         | Profitability analysis                                                    |
| Fast analysis without extended calculations                                                                                           | Least of human, time and technological resources. Necessity of internal information only.                                         | Bankruptcy coefficient                                                    |
| Fast analysis. The results are easily interpreted.                                                                                    | Least of human, time and technological resources. Necessity of internal information only.                                         | Altman coefficient                                                        |
| Fast analysis. The results are easily interpreted.                                                                                    | Least of human, time and technological resources. Necessity of internal information only.                                         | Two factors model                                                         |
| Fast analysis. The results are easily interpreted.                                                                                    | Least of human, time and technological resources. Necessity of internal information only.                                         | Taffler model                                                             |
| To receive the most objective evaluation by means of analysis of actual financial reports to predict the financial state of companies | Infinitude of human, time and technological resources                                                                             | D-score                                                                   |
| To carry out qualitative evaluation of financial viability                                                                            | Infinitude of human, time and technological resources                                                                             | A-score                                                                   |
| To receive the results presented the specific of concrete company                                                                     | Least of human, time and technological resources. Necessity of internal information and external information on industry specific | Method of bankruptcy prediction taking into account specifics of industry |
| Fast analysis. The results are easily interpreted.                                                                                    | Least of human, time and technological resources. Necessity of internal information only.                                         | Altman coefficient, modified Altman coefficient                           |
| Analysis of possibility to pay the debts                                                                                              | Infinitude of human and technological resources. Necessity of internal information only                                           | Credit risk analysis                                                      |

For the integrated assessment of certain models and methods, the author suggests calculating a **total rate of priority** on the basis of the following formula:

$$Pk_z = \frac{\sum_{z=1}^n (Vs_{z_y} / \sum_{z=1}^n Vs_{z_y})}{4}, \quad (4)$$

where

$Pk_z$  - total rate of priority of  $z$  model or method,  $z=\{1,..n\}$ ;

$n$  - the number of methods or models;

$Vs_{z_y}$  - weighted average grade of the model  $z$  by the specific feature  $y$  of the classification.

The efficiency of a certain method for solvency analysis and bankruptcy forecast depends on the conditions of its application. The accuracy of the results obtained directly depends on the volume of the information analyzed. However, it is difficult to imagine such a situation in practice when a company possesses fully complete information in order to apply a certain method, which is why the results obtained, will just be probabilistic. That is why in order to receive more precise results, companies can apply several methods simultaneously. Although, in this case, there appear to be difficulties with the interpretation of the results obtained.

While applying the various methods, different results will be obtained: how to understand which of them reflects the situation in the most objective way? In connection with the above said the author suggests **an integrated approach to the solvency analysis and bankruptcy forecast** applying several methods simultaneously and considering their priorities. The given method implies rating the results obtained in the process of the analysis of financial viability based on several methods and models for solvency analysis and bankruptcy forecast.

For comparability of results of research the standardized values of financial stability should be found. Standardized value of financial stability is defined as following:

$$Rn_z = \frac{Rf_z - Rl_z}{Rl_z - Rb_z}, \quad (5)$$

where

$Rn_z$  - standardized value of  $z$  model result;

$Rf_z$  - actual result according to the  $z$ -model;

$Rb_z$  - value, which identifies the bankruptcy zone;

$Rl_z$  - value, which identifies the financial viability zone.

Weighted average grade of financial viability level is calculated by means of following formula:

$$Fs_{vs} = \frac{\sum_{z=1}^n (Pk_z * Rn_z)}{\sum_{z=1}^n Pk_z}, \quad (6)$$

where

$Fs_{vs}$  - weighted average grade of financial viability level;

$Pk_z$  - total rate of priority of  $z$  model or method,  $z=\{1,..n\}$ .

The author of the present work has verified the reliability of the results of the integrated approach to the solvency analysis and bankruptcy forecast in the following way: has applied 4 various methods of solvency analysis and bankruptcy forecast, rated the results obtained and calculated a weighted average level of financial viability.

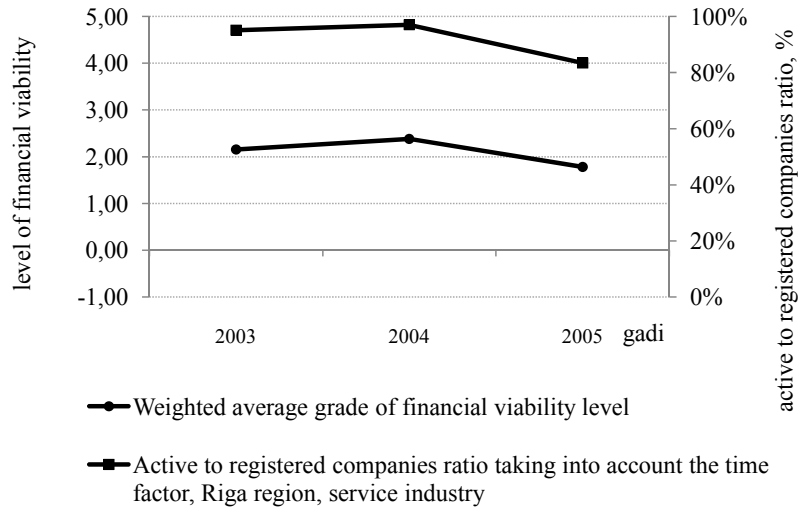


Fig.6. Comparison between the results of the complex approach to the solvency analysis and bankruptcy forecast and activity of the service providing companies in the Riga region

As it is seen from the graph, changes in the indicator of the companies' activity and results of a complex assessment of financial viability reflect the same trend at the service market, which signifies the objectiveness of the results of the integrated approach to analysis of financial viability.

In the given chapter, that author suggests observing the **analysis of the factors** of financial viability. Proceeding from the model of the company's harmonious sustainable development, the analysis of the factors of financial viability should be based on the following four indicators: profitability of sales, profitability of assets, debt to equity ratio, interest coverage ratio

In order to efficiently manage financial viability it is necessary to add the analysis of sensitivity of the indicators of financial viability to the factor analysis. The author suggests carrying out the analysis of sensitivity of the indicators of financial viability by means of coefficients of elasticity. Coefficients of elasticity can be calculated according to the following formula (7):

$$E_{F_l^r}^n = \frac{(I_{F_l^r}^{n-1} - I_{F_l^r}^n) / I_{F_l^r}^{n-1}}{(V_{F_l^r}^{n-1} - V_{F_l^r}^n) / V_{F_l^r}^{n-1}} \quad (7)$$

where

$E_{F_l^r}^n$  - coefficient of elasticity of indicator  $l$  in accordance with  $r$  factor in the year  $n$ ;

$I_{F_l^r}^n$  - change of  $l$ -indicator under the influence of  $r$ -factor;

$V_{F_l^r}^n$  - the value of  $r$  factor influencing  $l$  indicator in the year  $n$ .

The mechanism for managing financial viability should be based on achieving the level sufficient for provision of sustainable development ( $Pf_l=100\%$ ). The author reckons that in order to efficiently manage financial viability it is important to consider the following conditions and propositions:

1. A company is able to efficiently influence only the internal factors.
2. A company should firstly optimize the values of those indicators of financial viability the adequacy of which is lower than 100%. Such optimization is possible by the way of change in the values of those factors in relation to which the given indicators are the most flexible.
3. In the case when the values of all indicators of financial viability are sufficient, the company is considered financially viable, but it can increase the level of its financial viability by means of improving the indicators whose sufficiency is the lowest.

It is possible to calculate the sufficient level of the change in the chain tempo of growth of i-factor which provides a 100% sufficiency of l indicator using the formula:

$$IN_{F_l^r} = \frac{(100 - Pf_l)}{E_{F_l^r}^n} \quad (8)$$

where

$IN_{F_l^r}$  - changing level of tempo of growth of r-factor which provides 100% adequacy of l-indicator;

$Pf_l$  - the sufficiency level of l indicator;

$E_{F_l^r}^n$  - coefficient of elasticity of indicator l in accordance with r factor.

The suggested approach to the analysis of financial viability means:

1. To elaborate and determine the marginal values of financial viability and the level of their sufficiency, as well as the methods for their determination;
2. To develop the harmonious quantitative model of the element structure of sustainable development;
3. To develop a complex approach to the analysis of insolvency and bankruptcy probability forecast as the anti-crisis tool based on the principles of the criteria rating;
4. To develop the principles of managing financial viability based on the elasticity in relation to the influence factors

Thus, investigating the company's "financial viability" within the context of sustainable development and basing on the principles of the harmonious distribution of the structural elements of sustainability, the author suggests the innovative tool for managing financial viability in order to provide the company's sustainable development.

## **5. PRACTICAL STUDY OF FINANCIAL VIABILITY OF THE SERVICE COMPANIES IN LATVIA**

*The chapter consists of 21 pages, 8 tables, 11 figures un 1 formula.*

The analysis of financial viability of small and medium-sized enterprises, which were operating in the Riga region on the service market in 2007-2008 was carried out for the practical approbation of the elaborated methods of study and management of financial viability. Testing the suggested approaches and methods, the selected historical time period of 2003-2008 years allow understanding the reasons of a company's bankruptcy from today's point of view.

Using the total of the indicators included in the IMF methodology, the author has carried out the analysis of the financial accounts and calculated the values of the indicators of financial viability for the service providing companies in the Riga region in Latvia. The results of the analysis are presented in the graph (fig.7).

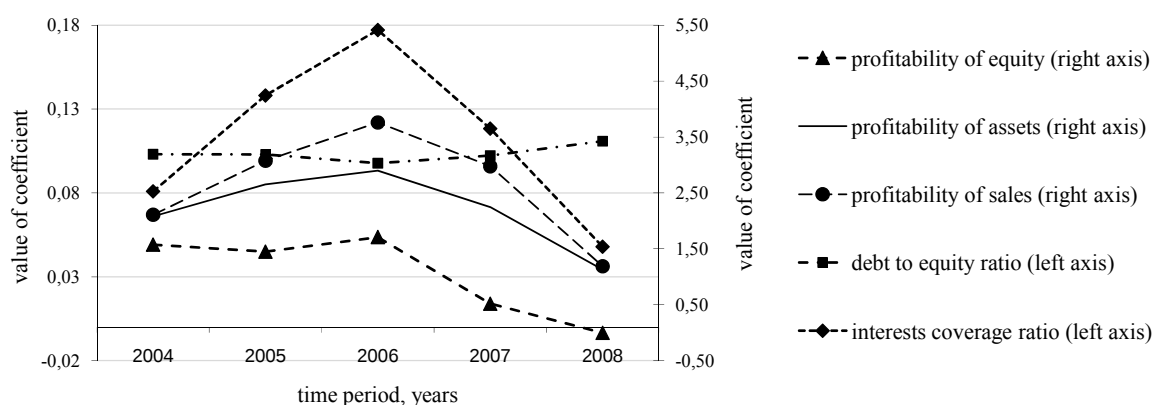


Fig.7. Dynamic of values of financial viability indicators

As you can see on the chart 7 there was a growth of all indicators of financial viability until 2006). In 2007 there was a dramatic fall. The author has performed the analysis of the service market in the period 2003-2007 and has come to the conclusion that the real estate property business was the most influential sphere in the service industry.. The share of enterprises operating in this business sphere in the total number of enterprises registered in the service industry constituted 43%, 46%, 47% and 49% in 2004, 2005, 2006 and 2007 respectively. The contribution of real estate deals to GDP on average for 4 years constitutes 20% of the common contribution of enterprises which operate in the service industry. The main factor that influenced the tendency of decrease of indicators of financial viability since 2007 the author considers to be a fall in demand in the sphere of real estate property deals. As it is stated in the report on the real estate market of Latvia in 2007, the prices of real estate were growing dramatically until April, which later resulted in a sharp fall in demand – within a year the demand level decreased by 20% compared to 2006. The tendency of the amount of deals in the real estate market also corresponds to the tendencies of changes in the indicators of financial viability.

What might the decrease in the activity of the observed companies be connected with?

1. In Latvia there was a decrease of 10% in the mortgage loans which led to the fall in the buying ability and the demand in real estate respectively in 2007.

2. The economic recession in the real estate market was influenced by the changes in legislation, like: the introduction of a down payment of the mortgage amount; prevention of speculative deals by the government.
3. The real estate market in Latvia was also influenced by the situation in the world: recession in the real estate market in the USA influenced the subsidiaries in Latvia; the increase in interest rates for mortgages as a result of currency changes.

Debt to equity ratio also reflects vivid trends in the service market and, in particular, the real estate market. According to the statistics, the number of mortgages accommodated is growing every year, whereas the own capital in average is also growing. Nevertheless, the trend of this indicator testifies that the growth rate of the companies' own capital is lower than the growth rate of the companies' debt capital, which can lead to the risk of the loss of the companies' solvency and is evident of the inefficient policy of managing the companies' borrowed and own funds.

The research demonstrated that in order to provide financial viability and work in the conditions of a minimal bankruptcy risk for the year 2007, the companies of the service industry in Riga region should have increased the level of profitability of sales by 85% and the level of profitability of asset by 96%. For the year 2008 for the same purposes the companies should have increased the level of profitability of sales by 96% minimum, profitability of asset by 100% minimum, but the debt-to-equity ratio coefficient should have been decreased by 4% minimum.

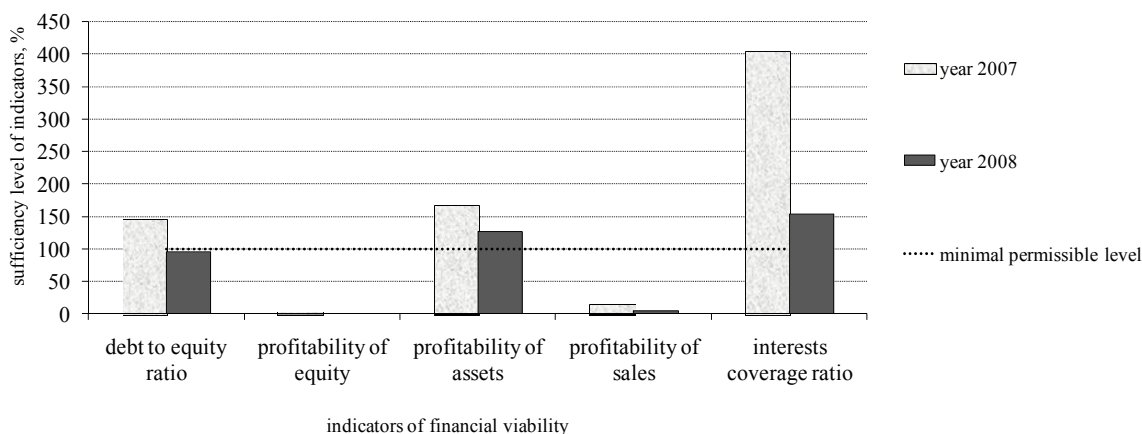


Fig. 8. Sufficiency levels of financial viability indicators in 2007 and 2008

In general, the given analysis demonstrates that during the period under review the level of financial viability has decreased significantly. However, specific conclusions and suggestions will be able to be drawn only after assessing a real contribution of financial viability to the companies' harmonious sustainable development in 2007 and 2008.

The results of analysis of marginal values of financial viability indicators in 2007 and 2008 are presented in the table 4.

Table 4

The results of analysis of marginal values of financial viability indicators  
in 2007 and 2008

| Indicator ( <i>I</i> )                  | Upper marginal value<br>$RA_i$ |      | Lower marginal value<br>$RZ_i$ |      | Sufficiency level of indicator, %<br>$Pf_i$ |      | Lack or excess of financial viability, %<br>$FS_{tr}^I$ $FS_{rez}^I$ |      |
|-----------------------------------------|--------------------------------|------|--------------------------------|------|---------------------------------------------|------|----------------------------------------------------------------------|------|
|                                         | 2007                           | 2008 | 2007                           | 2008 | 2007                                        | 2008 | 2007                                                                 | 2008 |
| Profitability of equity ( <i>PKR</i> )  | no                             | no   | 5.9                            | 4,38 | 4                                           | 0    | -96                                                                  | -100 |
| Profitability of assets ( <i>AKR</i> )  | no                             | no   | 0.03                           | 0,03 | 166.67                                      | 127  | 66                                                                   | 27   |
| Profitability of sales ( <i>IMR</i> )   | no                             | no   | 0.398                          | 0,91 | 15.09                                       | 4    | -85                                                                  | -96  |
| Debt to equity ratio ( <i>APK</i> )     | 0                              | 0    | 4.99                           | 3,27 | 147.00                                      | 96   | 47                                                                   | -4   |
| Interests coverage ratio ( <i>PMS</i> ) | no                             | no   | 1                              | 1    | 405.00                                      | 154  | 305                                                                  | 54   |

In order for the company to work efficiently, the only assessment of the level of its financial viability is not enough; it is necessary to apply the tools for managing its financial viability. As it has been demonstrated in the theoretical part of the present research, there are two fundamental approaches to this kind of management – crisis management and preventive management. In order to determine which of these tools could have been used by the companies for the years 2007 and 2008 respectively, the author has carried out the assessment of a real contribution of financial viability to the provision of the companies' harmonious sustainable development.

The results of the research show that actual contribution of financial viability due to the company's internal resources under the optimistic scenario in 2007 comprises 32.14%, which is 34% higher than theoretical, consequently, companies in 2007 had potential for not only the state of equilibrium but for sustainable development too; the reserve of financial viability to compensate the insufficiency in other elements of sustainability, in order to preserve the state of equilibrium and provide sustainable development.

Actual contribution of financial viability due to the company's internal resources under the optimistic scenario in 2008 comprises 19%, which is 21% less than theoretical. That means that in 2008 the companies had no potential for the state of equilibrium and sustainable development.

Table 5

Contribution of financial viability to the provision of the companies' harmonious sustainable development

| Year | Theoretical contribution of financial viability to the provision of the companies' harmonious sustainable development | Real contribution of financial viability to the provision of the companies' harmonious sustainable development | The approach to financial viability management |
|------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 2007 | 24%                                                                                                                   | 32%                                                                                                            | Preventive                                     |
| 2008 | 24%                                                                                                                   | 19%                                                                                                            | Crisis-management                              |

Contribution of structural elements to the provision of the companies' sustainable development is presented on Fig. 9

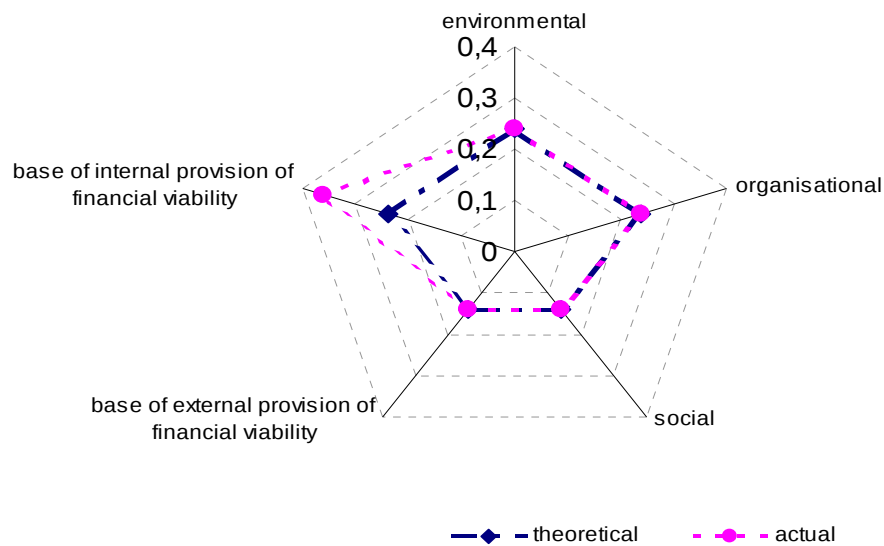


Fig. 9. Contribution of structural elements to sustainability in 2007 and 2008

The comparative analysis of the indicators of the companies' financial viability and the assessment of the contribution of financial viability to the provision of a sustainable development for the years 2007 and 2008 showed that the lack of a timely preventive management of the level of financial viability (relevant for the year 2007) could, alongside with the external unfavorable factors, result in a considerable decrease in the level of the companies' financial viability. In connection with this, the companies should have applied not a preventive but crisis approach to their management of financial viability for the year 2008.

Since the statistical data available is limited, the author has carried out the complex assessment of the analysis of a company's solvency and bankruptcy probability forecast applying the following methods: a two-factor model, the Altman coefficient, the Taffler model and the Altman modified coefficient. In accordance with the results of the complex assessment, the bankruptcy probability and the probability of loss of solvency equals to 0.62 (a standardized weight average value), which is a little higher than the lower limit (0) of financial viability. Therefore, the companies did not have any risk of bankruptcy in the short-term period and there was a time resource for restoring the sufficient level of financial viability by means of a timely factor analysis and introduction of the relevant measures. In the given situation, carrying out the factor analysis can reveal the reasons the situation happened for the year 2008 as well as suggest a number of possible measures for increasing the level of financial viability.

The author has carried out the **analysis of the factors** which influence the trend of changing the values of the indicators of financial viability, as well as the analysis of the **sensitivity** of the indicators in relation to such factors as price, costs, capital and asset structure, and demand. The results of research are presented in the Table 6.

Table 6

## Analysis of factors and sensitivity analysis of financial viability in 2007 and 2008

| Indicators               | Year 2007            |                      | Year 2008            |                      | Factors                                         | $I_{F_l^r}$ |       |       |       |       | $E_{F_l^r}^n$ |        |        |        |       |
|--------------------------|----------------------|----------------------|----------------------|----------------------|-------------------------------------------------|-------------|-------|-------|-------|-------|---------------|--------|--------|--------|-------|
|                          | Lower marginal value | Sufficiency level, % | Lower marginal value | Sufficiency level, % |                                                 | 2004        | 2005  | 2006  | 2007  | 2008  | 2004          | 2005   | 2006   | 2007   | 2008  |
| Profitability of sales   | 0,40                 | 15                   | 0,91                 | 4                    | Volume of sales                                 | 6,22        | 8,17  | 5,77  | 0,52  | -0,20 | 50,85         | 30,97  | 30,11  | 19,39  | 1,16  |
|                          |                      |                      |                      |                      | Price                                           | 2,91        | 1,25  | 1,86  | 2,15  | 0,04  | 47,94         | 29,71  | 28,25  | 16,07  | 1,13  |
|                          |                      |                      |                      |                      | Operating costs                                 | -7,32       | -8,35 | -5,70 | -2,08 | 0,14  | -41,33        | -25,53 | -24,51 | -13,89 | -0,95 |
|                          |                      |                      |                      |                      | Sales costs                                     | -0,72       | -0,55 | -0,77 | -0,36 | 0     | -3,69         | -2,31  | -2,07  | -1,31  | -0,10 |
|                          |                      |                      |                      |                      | Administrative costs                            | -0,65       | -0,44 | -0,29 | -0,50 | -0,01 | -2,64         | -2,51  | -0,94  | -2,04  | -0,66 |
| Profitability of assets  | 0,03                 | 166                  | 0,03                 | 127                  | Price                                           | 1,10        | 0,60  | 1,16  | 0,13  | -0,01 | 118,12        | 153,37 | 61,36  | -289   | 4,38  |
|                          |                      |                      |                      |                      | Share of current assets in the assets           | 0,02        | 0,02  | -0,01 | -0,03 | 0     | 1,16          | -0,15  | 1,18   | 0,63   | 30,04 |
|                          |                      |                      |                      |                      | Share of inventories in current assets          | 0,08        | -0,05 | 0,08  | 0,04  | 0     | -1,13         | 0,32   | 2,15   | 1,10   | 31,29 |
|                          |                      |                      |                      |                      | Inventory turnover                              | -0,81       | -0,51 | -0,27 | -0,48 | -0,03 | -17,68        | -3,78  | -2,84  | -112   | 3,59  |
| Debt to equity ratio     | 4,99                 | 147                  | 3,27                 | 96                   | Share of debt in assets                         | 0,03        | 0,04  | 0,00  | 0,02  | 0,02  | 1,00          | 1,00   | 1,00   | 1,00   | 0,90  |
|                          |                      |                      |                      |                      | Share of own capital in the assets              | 0,16        | 0,13  | 0,18  | 0,13  | -0,11 | -1,19         | -1,18  | -1,18  | -1,15  | -0,81 |
|                          |                      |                      |                      |                      | Share of current capital in own capital         | -0,17       | -0,09 | 0,00  | -0,08 | 0,14  | -1,02         | -1,09  | -1,18  | -1,07  | -0,94 |
|                          |                      |                      |                      |                      | Share of own current capital in current capital | 0,07        | -0,02 | -0,21 | -0,07 | -0,03 | 1,09          | 1,07   | 0,97   | 1,00   | -0,91 |
|                          |                      |                      |                      |                      | Share of own current capital in own capital     | 0,04        | 0,11  | 0,03  | 0,07  | 0,09  | -1,65         | -1,27  | -1,79  | -0,51  | 0,91  |
| Interests coverage ratio | 1                    | 405                  | 1                    | 154                  | Profit                                          | 0,72        | 0,43  | 1,37  | -0,15 | -1,04 | 1,00          | 1,00   | 1,00   | 1,00   | 1     |
|                          |                      |                      |                      |                      | Interests                                       | -0,08       | -0,17 | -0,59 | -0,34 | 0,01  | -1,65         | -1,27  | -1,79  | -0,51  | 0,04  |

As the research results for the period 2003-2008 demonstrated, profitability of sales is the most elastic according to the real volume of sales, the highest elasticity of profitability of assets is according to inventory turnover, the highest elasticity of debt to equity ratio – according to the share of own capital in the assets, but interest coverage ratio – according to the volume of interest payment (fig. 10).

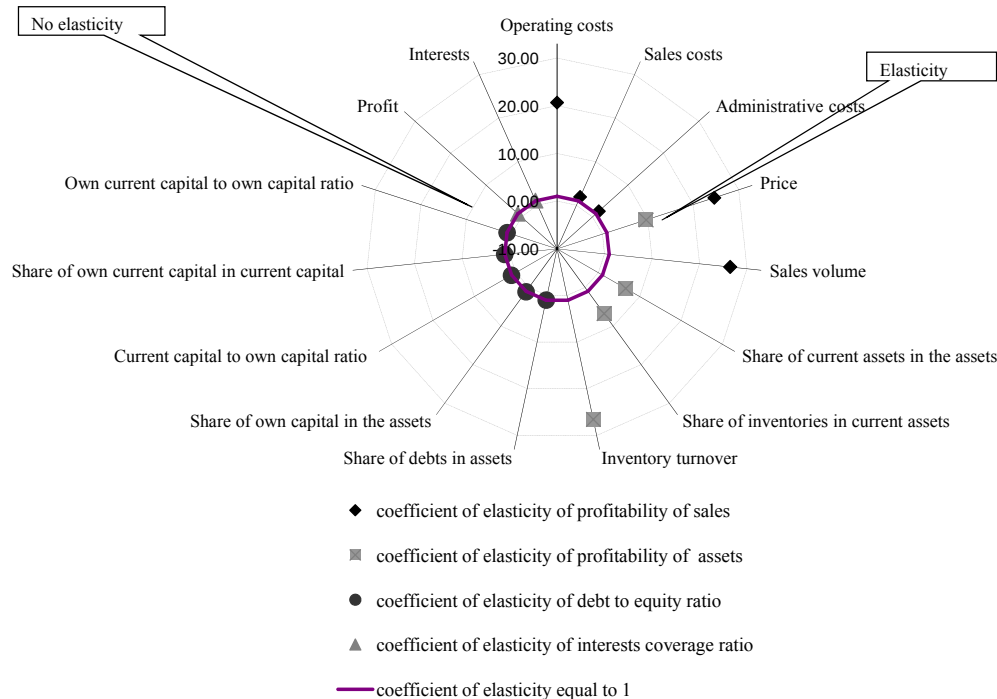


Fig.10. Average elasticity of financial viability indicators, 2003-2008 years

As the study of the real estate market shows, the year 2007 can be considered as the time when the general recession in Latvia started, which affected the success of the companies involved in the service industry. A timely optimization of the level of their financial viability could have been able to preserve their vital capacity. The Latvian service-providing companies in the Riga region could have increased the level of their financial viability by means of changing the indicators whose values are not adequate (i.e. profitability of sales indicator) by means of optimizing that internal (manageable) factor in relation to which the profitability of sales is the most elastic (average elasticity in the previous periods is the highest) – i.e. operating costs. The smallest change which was necessary for a 100% sufficiency of the given indicator could have been provided by means of decreasing the growth rate of operating costs by 4% in the year 2007. In 2008 it could have been possible to increase the level of the companies' financial viability by means of decreasing the growth rate of operating costs by 4.7% and decreasing the growth rate of the share of gearing in assets by 98%. Thus, in the year 2007 under the timely correct management over financial viability in order to provide its sufficient level it was necessary to change the value of only one factor (operating costs). In real life, the methods of preventive management had not been applied. In the year 2008 the situation worsened and there appeared the need for a crucial change in the volume of costs as well as in the capital structure. As in 2007 and 2008 there was no surplus

of the values of the indicators of financial viability, there was no need to correct the upper marginal value of these factors which influence the level of financial viability.

## 6. PRACTICAL APPROBATION OF A HARMONIOUS STRUCTURAL MODEL OF A COMPANY'S SUSTAINABLE DEVELOPMENT ON THE BASIS OF THE EXPERIENCE OF DIFFERENT COMPANIES

*The chapter consists of 8 pages, 3 tables and 1 figure.*

For the sake of testing of the model of harmonious sustainable development, the author has chosen two Latvian companies involved in the service industry as the object for analysis - an insolvent company (in 2009 there were initiated proceedings on the company's insolvency) and a successful company (for the year 2010 this company was recognized as one of the most successful in Latvia).

The task of the research, in this case, was to prove to what extent the approach to investigation of financial viability within the context of a company's sustainable development is objective. If the results of the analysis of financial viability within the framework of the offered methodology will coincide with the real situation in the company, the given approach can be considered objective and its application in the process of managing financial viability is efficient and feasible.

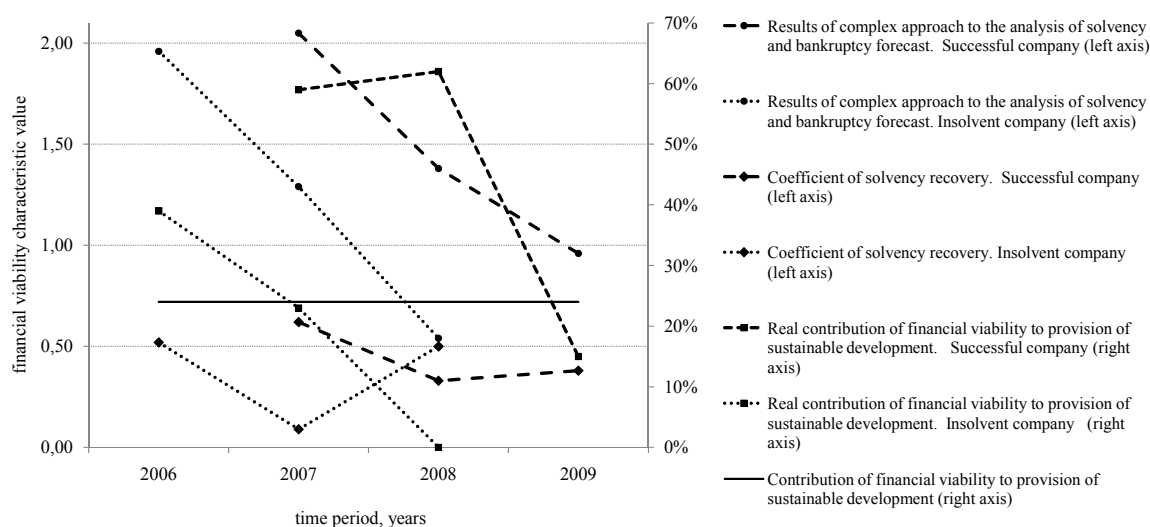


Fig 11. Financial viability contribution to provision of sustainability of an insolvent company and a successful company

In general, the total results of investigating a bankrupt company and a successful company during a three-year period enable to draw the following conclusions:

1. Dynamics of decreasing the contribution of financial stability to the provision of harmonious sustainable development for the insolvent company (39% - 23% - 0%) reflects the real situation at this company which led to the company's insolvency.
2. Dynamics of change in the contribution of financial viability to the provision of a harmonious sustainable development for the successful company (59% -

- 62% - 15%) testifies that till the year 2009 the situation at the company was stable, the contribution of financial viability to sustainable development exceeded the essential theoretical value. However, in 2009 the consequences of the global recession and active investment activity resulted in the decrease in this indicator.
3. In the period from 2007 until 2008 the contribution of financial viability to the sustainable development of the successful company was three times higher than that of the company declared insolvent in 2009.
  4. In spite of the fact that the analysis of the contribution of financial viability of the insolvent company since 2007 demonstrated the lack of potential for development and preservation of the state of balance, while the similar situation at the successful company can be seen since 2009, the integrated approach to a bankruptcy forecast shows that:
    - The probability of bankruptcy for the successful company seems relatively low in the nearest future, which is confirmed by their work so far. Nevertheless, the probability of bankruptcy for this company is growing with every year.
    - The probability of bankruptcy for the insolvent company used to be relatively low (but much higher than for the successful company). At the same time the dynamics of a negative change in this coefficient from 2006 till 2008 used to be very high;
    - The trend of a negative change in the value of the coefficient of bankruptcy probability within the framework of the integrated approach for both companies testifies the necessity for an accurate control over the level of financial viability and application of the recommendations for its management. It is vital for the insolvent company, as well as for the successful company.
  5. The results show that the suggested methodology for assessing financial viability is more objective and applicable for accurate conclusions than the complex approach to the analysis of solvency and bankruptcy forecast, as it examines the coefficients of financial viability from the viewpoint of their adequacy for the company's sustainable development taking into consideration the specific character of the company's activity, while the methods for bankruptcy forecast are based on the analysis of the statistical historic information.
  6. While applying the complex approach to the analysis of solvency and bankruptcy forecast, more attention should be paid not to the absolute values of the coefficients but the dynamics of their change.

## **CONCLUSIONS AND PROPOSALS**

Investigating theoretically the role of financial viability in the provision of sustainable development, the author has drawn the following conclusions:

- 1) In the process of the definition and lexicographic analysis of the concept “financial viability” a functional dependence between such concepts as “stability”, “development”, “viability”, “elasticity”, “safety”, “sustainability”, “suitability”, “balance”, “financial competence”, “solvency”, “bankrupt” has been revealed. The definition and lexicographic analysis carried out allows to present the following idea of the concept “financial viability”:
- 2) The sphere of application of the indicators of financial viability included in the IMF methodology can be not only used for the analysis of the financial sector of the state economy but also the real estate sector and service sphere. Nevertheless, it was necessary to elaborate some additional suggestions for improvement of the sphere of application of these indicators, including:
  - The concepts “adequacy”, “surplus”, “stock”, “deficit” of financial viability have been introduced
  - The methodology for calculation of the level of “adequacy”, “surplus”, “stock”, “deficit” of financial viability has been offered
  - The methodology for calculating the higher and lower limits of the values of the indicators of financial viability has been offered
- 3) The elements of a company’s sustainable development can be structured based on the harmony principle, which allows to quantitatively assess the level of contribution of financial viability to the provision of the company’s sustainable development.
- 4) The mechanism for managing financial viability within the context of sustainable development should be based on the analysis of factors and elasticity, the integrated approach to the analysis of solvency and bankruptcy probability forecast, which enable to determine the adequate change in the growth or fall rate of the factors which influence financial viability in order to provide the adequate level of financial viability and sustainability.

The practical study of financial viability has enabled to draw the following conclusions:

- 1) The analysis, in the run of which the level of the contribution of financial viability to sustainable development of the service companies in Latvia has been determined, testifies that at the end of the year 2007 these companies had such internal potential which was sufficient for maintaining their general viability, as well as sustainable development, they also possessed the reserve of financial viability sufficient to compensate for the lack of other elements of financial viability. In 2008 the companies did not possess the potential sufficient for maintaining their viability or sustainable development.
- 2) The service companies in the Riga region in Latvia could have increased the level of their financial viability if they had decreased the growth rate of the operating cost chain by 4% in 2007, and by 4.7% in 2008, and the growth rate of the borrowed funds chain by 98%.
- 3) The lack of the timely preventive management over financial viability (which was urgent in 2007) along with the unfavorable external factors, led to the situation where in 2008 the level of the companies’ financial viability decreased dramatically. Thus, in 2008 in the process of managing financial

viability the crisis approach should have been used rather than the preventive one.

The model of harmonious sustainable development and the suggested approach to managing the level of financial viability have been tested on two Latvian companies operating in the service industry – an insolvent one and a successful one. As a result the following conclusions have been drawn:

- 1) The dynamics of change in the contribution of financial viability to the provision of harmonious sustainable development of the successful and insolvent companies reflected the real trends of their financial position.
- 2) The level of contribution of financial viability to the harmonious sustainable development of the successful company is three times higher than the company which was claimed insolvent.
- 3) The assessment of the contribution of financial viability to sustainable development reflected the trends of the world economy – with the aggravation of the recession the contribution of financial viability to sustainable development of both companies decreased.
- 4) An integrated approach to bankruptcy forecast for the companies analyzed demonstrated that the bankruptcy probability for the successful company in the nearest future is relatively low, which is proved by their work so far. However, the bankruptcy probability for this company is growing with every year. The bankruptcy probability for the insolvent company was also rather low (but much higher than for the successful one). At the same time, the dynamics of a negative change in the value of the given coefficient was very high.
- 5) The results show that the suggested methodology for assessing financial viability is more objective and applicable for accurate conclusions than the complex approach to the bankruptcy forecast, as it examines the coefficients of financial viability from the viewpoint of their adequacy for the company's sustainable development taking into consideration the specific character of the company's activity, while the methods for bankruptcy forecast are based on the analysis of the statistical historic information. Therefore, the assessment of the contribution of financial viability to sustainable development provides a more strict and accurate assessment of the company's condition and potential.
- 6) While applying the complex approach to the bankruptcy forecast, more attention should be paid not to the absolute values of the coefficients but to the dynamics of their change.

The research carried out in the present Doctoral dissertation paper suggests the solution to one of the crucial issues the modern company's face – the lack of a tool for managing financial viability, which limits the potential for a company's sustainable development. The results of the research enabled to achieve the set goals - to elaborate the tool for managing a company's financial viability in order to provide a company's harmonious sustainable development. Implementation of the tool for managing financial viability which has been elaborated within the present research for the optimization of activity at the Latvian companies in the years 2007 and 2008 could have resulted in significant improvement of their economic situation, and, respectively, could have allowed them to avoid the bankruptcy. The application of this tool in the companies' activities is still vital.

The following proposals have been made in the course of elaborating the present doctoral dissertation:

- 1) The tool for managing financial viability within the context of sustainable development offered within the framework of the present research can be applied for the analysis of the companies' activity for a certain date as well as for the forecast of the level of their financial viability in the future on the basis of their regular financial accounting. The continuing monitoring for the level of financial viability is possible by means of automation of the process of mathematical calculations offered by the author using IT platforms.
- 2) The author recommends using the suggested approach to investigating the level of financial viability in the process of taking managerial and financial decisions within the framework of analysis of a company's alternative scenarios of development.
- 3) In the process of managing financial viability within the context of sustainable development, the preference should be given to improving the values of those indicators whose degree of significance for the provision of a sustainable development is the highest.
- 4) The approach elaborated to the investigation of the level of financial viability can in practice be complemented with the average assessment of the general level of financial viability (but not just its certain indicators) by means of rating their upper and lower limits and determining the rated areas of adequacy, surplus or lack of financial viability.
- 5) Reliability of the models used in the complex approach to the analysis of insolvency and bankruptcy forecast require a regular check for objectivity.
- 6) For determining a correlation link between the indicators of financial viability and liquidity, as well as the leverage ratio with the purpose of determining the indicators' upper and lower limits, the author recommends the companies using the data specific for their companies, as this increases the accuracy of calculations in comparison with the data about the average indicators provided by CSP which have been used in the present research.
- 7) The company's potential from the viewpoint of providing sustainable development can be increased by means of elaboration of the approach to the assessment and management of financial viability as well as by means of the provision of adequacy of three other elements of sustainable development – ecologic, social and organizational.
- 8) The elaborated approach to assessing financial viability can be applied in court practice when making the decision about the bankruptcy of a company in respect of which initiated proceedings about insolvency.
- 9) The suggested approach to managing financial viability within the context of sustainable development can be recommended for the scrutiny and study in the education programs for the undergraduate and postgraduate students of the faculties of engineering economics and management